The Official Amstrad Magazine

July 1986

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AMSTRAD COMPUTER USER

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Software Special



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AMSTRAD COMPUTER USER

The official magazine for users of Amstrad computers

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EVERY WILD IMAGINATION NEEDS A LITTLE SELF CONTROL.



As an Amstrad CPC user, you enjoy some pretty sophisticated equipment.

So it's a pity if you are still missing that sophisticated, positive control your equipment deserves.

There's not much joy in a joystick, and keyboards can be all fingers and thumbs. Frustrating, especially when your imagination is much faster than your fingers!

What you need is an AMX Mouse.

Already thousands of Amstrad users have adopted an AMX Mouse and wouldn't be without it.



We didn't claim it was 'the best input device'. The press said it for us.

In fact it has received outstanding critical acclaim, and no wonder!

The AMX Mouse brings to Amstrad users, the same freedom and versatility which has, up to now, been the exclusive province of much more expensive computers.

In fact, it's no surprise that nearly all the new 16 bit 'State of the Art' computers now come with a Mouse as standard. Proof, if proof were needed, that the Mouse is here to stay.

The AMS range of Mouse software includes, AMX Art, AMX Utilities £19.95 (Disc), AMX Pagemaker £49.95 (Disc), AMX 3D Zicon £24.95 (Disc).

There is also a growing list of programs available from other leading software houses, which utilize the Mouse, including, Art Studio from British Telecom's Rainbird software collection, Mini Office II from Database and Electric Studio, many more titles will be available soon.

Isn't it about time you trapped an AMX Mouse?

The AMX Mouse package costs only £69.95 and includes AMX Art and AMX Control which allows you to create a Mouse Environment in your own programs. Software is supplied on cassette and 3" disc and a fully illustrated operating manual is also included.

This superb package is available from all good computer dealers or direct, using the FREEPOST order form below.

☎ FOR INSTANT ACCESS/VISA ORDERS TELEPHONE (0925) 413501/2/3

PLEASE RUSH ME **POST FREE** ________(Quantity) AMX MOUSE AMSTRAD PACKAGE/S (INCLUDING AMX ART) @ £69.95 EACH, INCL. VAT & P&P

ACU7/86

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AMX MOUSE

IMAGINATION AT YOUR FINGERTIPS

SEND TO: ADVANCED MEMORY SYSTEMS LTD., FREEPOST, WARRINGTON WA4 1BR.

Board ferry, cross Channel, sell games

Recent months have seen several titles cross the Channel from France and appear in our shops. The Amstrad is France's best selling computer and there are a couple of very good games companies writing software for the French market. Among the games we have seen are Le 5ème Axe, Get Dexter and Domesday Blues.

We've just heard that a new graphical adventure game will be available in July. Called Mandragore, the program has been written by one of the leading French software houses, Infogrames. Mandragore is a 260k adventure split over two cassettes, also available on disc. The game can be played by up to four players, with each player taking on the control of a character.

As with all good adventures there is a quest which must be completed. The mystery of King Jorian must be solved and various other problems worked out.

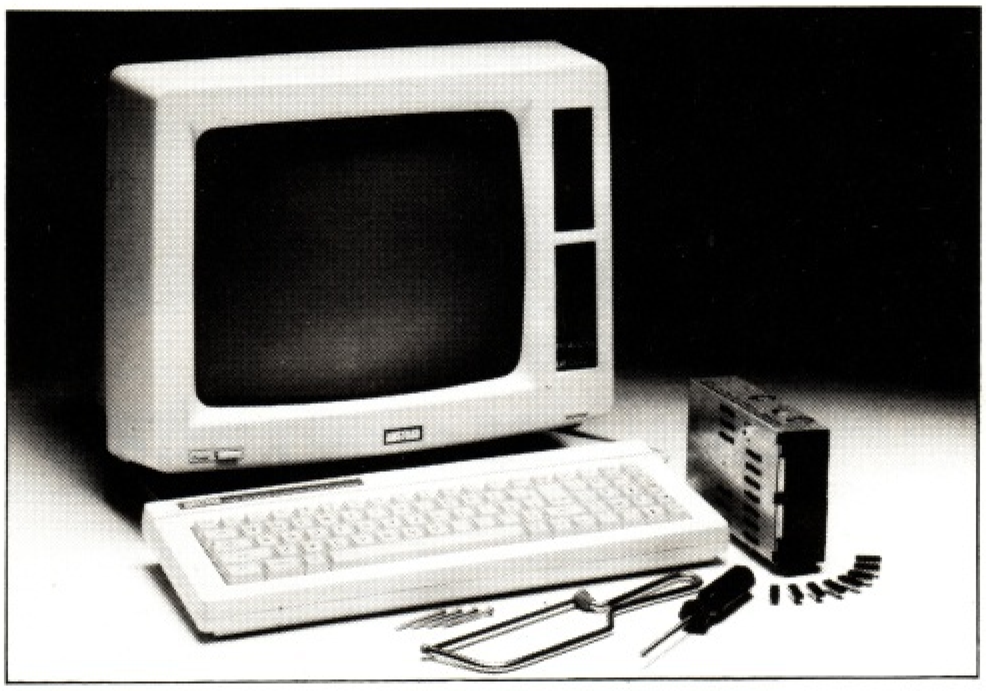
Mangragore costs £14.95 and will be available mid-July.

Official upgrades for Joyce . . .

Amstrad has just announced that it will now be possible to get a memory upgrade for your PCW8256. Previously, 8256 users upgrading the machine to 512k have had to invalidate their guarantee to fit the extra chips.

Dictaphone, the company which fits second disc drives, will send round an engineer to fit the memory chips to your machine and your guarantee will not be affected. The cost is likely to be £64.50+VAT and can be done at the same time as having a second drive fitted.

For more details phone Dictaphone on 0926 38311 and ask for the hot line.



Go for it!

. . . and unofficial upgrades

You can also get a complete upgrade from Citadel Products. Citadel are offering a DIY upgrade kit including drive and chips for £189.95 inclusive of VAT and carriage. This will invalidate your guarantee. If you don't feel competent to fit the drive yourself, Citadel can give you details of a local dealer to fit it for you. For details phone 01-951 1848.

Great news for non stick owners

If you still can't make up your mind which joystick to buy, despite reading our mega-review in the May issue, you may be interested to know that there are two new joysticks available.

The Fantastic III is a low cost joystick at only £6.95. It is a hold in the hand style unit with two fire buttons for left and right-handed play.

The second is the Quickshot II Plus. This is similar to the original QSII but incorporates microswitches. The Plus retails for £12.95.

Both joysticks have an auto-fire control, which has caused problems with joysticks in the past.

For more information telephone Palan Electronics on 01-368 1276.

Caxton winners

ACU is pleased to announce the winners of the April Caxton software competition.

First correct entry out of the box was from Mr J.S. Duncan of Peebles, Scotland who wins a copy of Cardbox, Scratchpad Plus, Brainstorm, Touch'n'Go and Smartkey. That lot should keep him busy for a while!

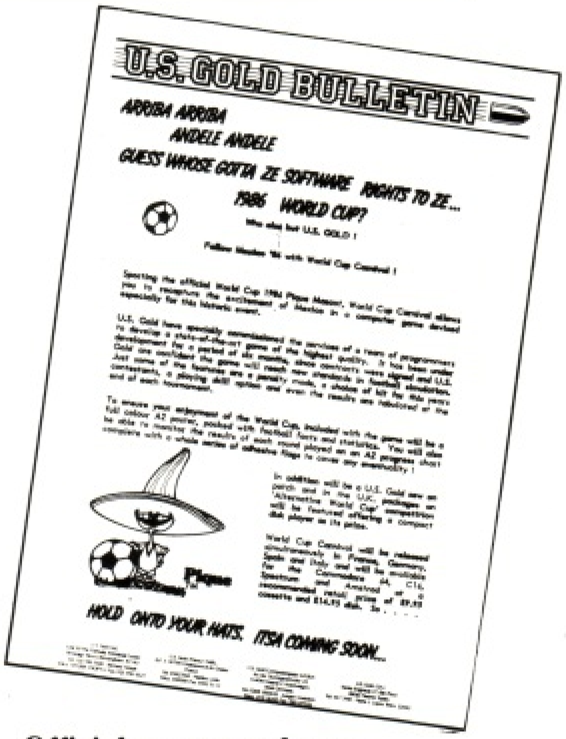
The runners up were S. Morrell of Upper Stratton, Swindon, Wiltshire, H. Flynn of Birtley, Chester-le-Street, Co. Durham, T. Allsop of Wimbledon, London SW19, Phil Chapman of Stewkley, near Leighton Buzzard, Bedfordshire, and Mike Scott of Marlow, Buckinghamshire. All the runners up will receive copies of Touch'n'Go.

Here we go, here we go, here we go!

US Gold has announced a football game devised especially for the 1986 World Cup. Now if you had a Spectrum or a Commodore 64, the chances are that you wouldn't be able to play it because somebody else is using the telly to watch the World Cup. But as you've got an Amstrad, you'll be able to watch and play at the same time.

Lots of goodies are promised with the game like a poster, stickers, a sew-on patch and a competition – so it doesn't sound as if the game's much good, does it?

Price is £9.95 tape and £14.95 disc.



Official mascot endorses US Gold game.

Rainbird take on Level 9

Software house Rainbird has certainly started on the right footing. Its first game – an adventure called The Pawn – is probably the best adventure ever.

It started life on the QL, moved to the Atari ST and will be converted to run on many other machines.

The Amstrad version will be 6128 only, making extensive use of the extra RAM but even then it will not feature the stunning graphics of the ST game.

In a bid to takeover the adventure game market Rainbird will market some Level 9 software, notably the Colossal Cave trilogy for the PCW.



Peter Austin, Level 9 partner, and Anita Sinclair, MD of Magnetic Scrolls . . . happy with their deal

Redhawk hits the streets

Redhawk, the latest adventure from Melbourne House has hit the streets. It is another graphic adventure but this time in the form of a cartoon strip. Keep your eye on next month's Adventure column for more information.



Police are called in when Redhawk programmers Mike Lewis and Simon Price realise their Porsche is missing.

Amstrad launch modem

The newest Amstrad product is a modem. This is a rebadged version of the Pace Nightingale which has proved to be a very popular device with many Amstrad users.

The Amstrad modem can be used with either the CPC or PCW computers but will need a serial interface to be used with either machine. Amstrad have two suitable interfaces. One, the Amstrad RS232 interface, can be used to connect the CPC computers either to Prestel or to scrolling systems such as MicroLink, Telecom Gold and bulletin boards. The other is the CPS8256 which uses the Mail 232 program on the LocoScript disc to access just scrolling systems.

There are several programs which will allow you to use Prestel with the Joyce and Amstrad has decided to let the user choose the software which best suits his or her application.

The specification is exactly the same as that of the Nightingale. The Amstrad modem supports V23 and V21 protocols, is BT approved and costs £99.95. It is available straight away.

Wear your screen dump with pride

Here's a nice idea. Put special coloured ribbons in your Epson FX70 or FX80 and do a screen dump to the printer. Several ribbon changes and screen dumps later, you should have a picture or design, edited on your computer and suitable for transfering to a T-shirt. After ironing on, the design is permanent and washable.

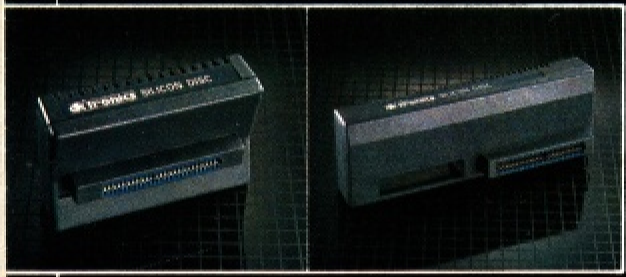
The special ribbons come in black at £12 and with five coloured pens for £19. It sounds expensive but we are told that the cost would work out between 16p and 50p per T-shirt.

Suppliers are Banbury Business Computers, Banbury, Oxon.

DAVE and PAM by ALEX & SPITAL



256K SILICON DISC



This is the fastest storage system available for Amstrad CPC computers and is compatible with CPM 2.2, CPM+ and all DK'Tronics peripherals including the 64K/256K memory expansions. When used with CPM+ and our 256K memory the edition disc capacity is a massive 442K (more than the PCW 8512 Ram Disc). It automatically logs on as drive B or drive C in two drive systems and does not require extra power supply.

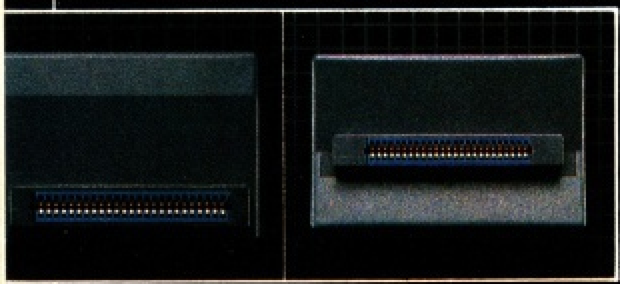
The 256K Silicon Disc is designed to be used with at least one normal disc drive attached. When fitted the directory uses 2K thus leaving 254K for storage, over 70K more than the normal discs.

Data and programs can be exchanged between the Silicon Disc and a normal disc, application programs can then work on the data at vastly increased speed especially on systems with only one normal drive.

Software is contained in an expansion ROM and there are two environments in which the Silicon Disc can be used, BASIC under AMSDOS where all the normal AMSDOS commands are fully supported LOAD, SAVE, MERGE, CAT etc and within CP/M 2.2 CP/M+ where commercial programs are designed to run on multi drive systems.

£99.95 including VAT (464 and 6128)

64K and 256K MEMORY EXPANSIONS



The memory expansions increase the Amstrad 464's internal memory to give a total of 128K or 320K. The 621's memory is increased to 320K. It is compatible with all DK'Tronics peripherals including the 256K Silicon Disc.

It is supplied with bank switching RSX software (464 software on cassette 6128 on disc.

The software adds some BASIC commands which makes it possible to use the second 64K (or 3rd or 4th and 5th in the case of 256K) for storage of screens, windows, graphics and basic arrays. This ability means that you can write much larger basic programs and sophisticated programs that use pull-down menus with ease.

With an expansion fitted on the 464 it then has the same memory configuration as the CPC 6128. It will then run CPM+ with its massive 61K T.P.A. area, opening up an even larger software base to 464 users. When using either of the expansions with CPM 2.2 on the 464 and 6128 computer the T.P.A. is increased to 61K.

The RAM is accessed by means of bank switching using a single I/O port. Memory is actually switched in and out of the 64KZ80 address space in 16K sub blocks (as are the ROMS). The port determines which particular combinations of the original four 16K sub blocks and any new sub blocks from the expansion RAM will occupy the 64K address space at any time. All of this switching is done automatically by the software supplied.

The contents of the expansion RAM are retained if the computer is reset and if the RAM is used for machine code the contents will remain even if the computer crashes.

64K **£49.95** including VAT (464 only)
256K **£99.95** including VAT (464 and 6128)





L/E/A/D FROM

DK'Tronics have produced this r
enlarge the potential of the 464
and have been designed to co







D/I/N/G

BEHIND

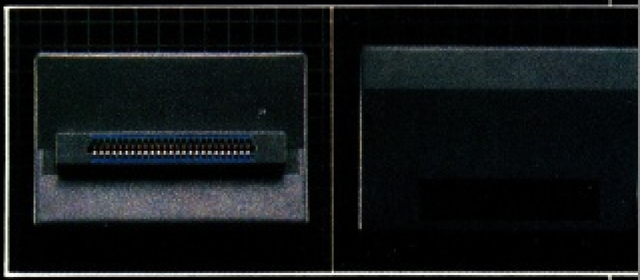
is range of powerful peripherals to 464 and 6128 Amstrad Computers compliment their style and colour.

dk'tronics

POWER BEHIND YOUR AMSTRAD

DK'Tronics Limited
Gorleston, Great Yarmouth, Norfolk NR31 6BE.
Phone 0493 602926 (24 hours), Telex 975408.

GRAPHICS LIGHT PEN



The sophisticated graphics package includes a colour palette, nudge control for one pixel accuracy, brush choice, text handling and user defined characters.

It can magnify, shrink, colour fill and create circles, rectangles, lines and curves.

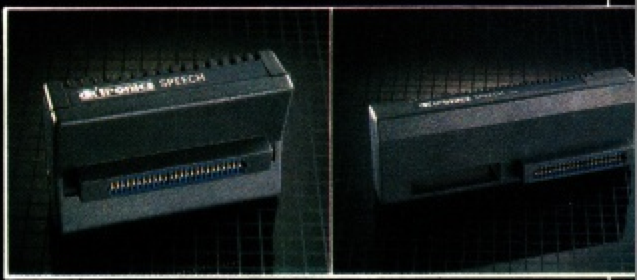
Complex pctures can be easily edited at pixel level using a scratch pad which is magnified to the full screen.

There is picture storage and retrieval, and a pen callibration utility and there is also an Amstrad/Epson compatible printer dump utility supplied on cassette.

There is a cassette version for the 464 and a ROM version for the 464 and 6128.

Cassette **£19.95** including VAT (464 only)
ROM **£29.95** including VAT (464 and 6128)

SPEECH SYNTHESISER



This simple to use speech synthesiser includes a powerful stereo amplifier and two high quality speakers which greatly improves the sound quality of the internal mono speaker.

It uses the popular SPO/256 speech chip and has an almost infinite vocabulary.

It is supplied with a text to speech converter software for ease of speech output creation. Everything you wish to be spoken is entered in normal english without special control codes or characters making it extremely easy to use.

The voicing of the words is completely user transparent and the computer can carry on its normal running of a program whilst the chip is talking. The speech output from the SPO/256 is mono and directed to both speakers.

There is a cassette version for the 464 and a ROM version for both the 464 and 6128.

Cassette **£29.95** including VAT (464 only)
ROM **£39.95** including VAT (464 and 6128)

HOW TO ORDER

DK'Tronics products are available in all good computer stores but may be obtained by completing the order form below and returning it to DK'Tronics or by telephoning and quoting your Barclaycard or Access number.

Orders are normally despatched within 24 hours and if you have any further queries concerning our products do not hesitate to give us a ring or send us a large stamped addressed envelope for our latest free 84 page technical manual covering our Amstrad product range.

Please send me ____________

Name ____________ Signed ____________

Address ____________

I enclose Cheque/PO/Cash for:- Total ____________

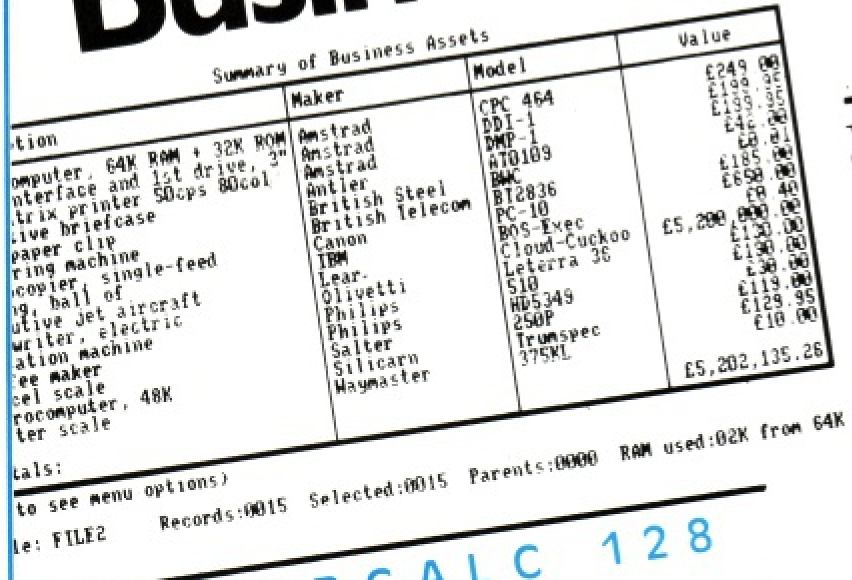
or debit my Barclaycard/Access number ____________

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C A M P B E L L   S Y S T E M S

AMSTRAD CPC

Quality Business Software.



M A S T E R F I L E   1 2 8

The Ultimate DATABASE for the CPC6128

This program is accepted as the ultimate database for the CPC6128. Of the original 64K MASTERFILE 464, Popular Computing Weekly's reviewer made the comment "... without question the best I have ever seen". Naturally, the "128" edition is even better. Like most database programs, MASTERFILE 128 can file, sort, search, display and print your data. What sets MASTERFILE 128 apart from the rest are the following ...

Multiple user-defined screen formats; left/right justify; headings; ruled lines; column totals; data-sharing using parent/child relational logic; word-processing; numeric editing; sort ascending/descending, alpha or numeric (probably the fastest sort in the business); search by any criteria (definitely the fastest search in the business!); bank switching. Up to 50 fields per record, all variable-length from 0 to 240 characters; totally menu-driven; needs just one disc drive; does not use CP/M (sorry you poor PCW8256 users ...).

There is more: data can be routed to other systems, such as TASWORD, PROTEXT, MASTERCALC 128. And for the real enthusiast, file access and update from USER BASIC opens up a whole realm of processing options. MASTERFILE comes with a detailed manual and example files. File capacity is 64K — for example 1,000 names and addresses.

- Forget the expensive, slow and aged CP/M dinosaurs: choose MASTERFILE.

M A S T E R C A L C   1 2 8

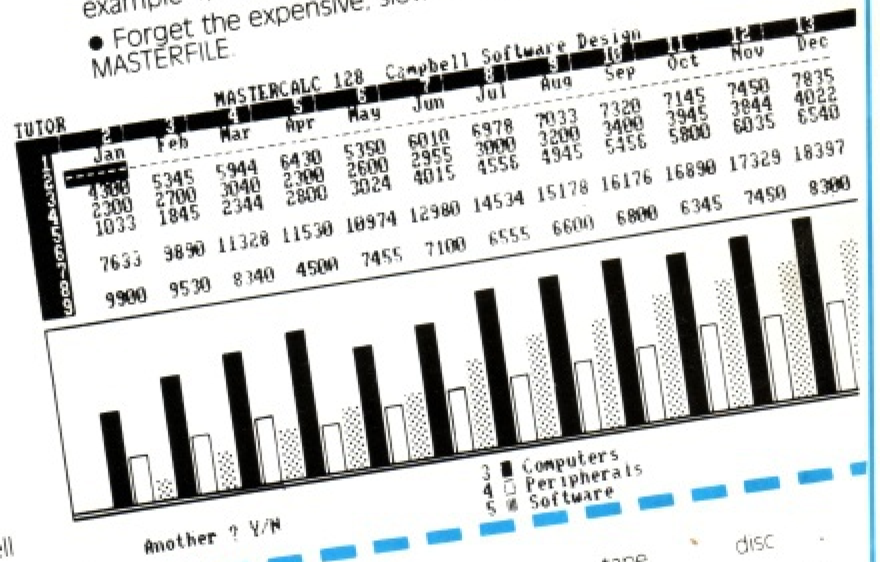
The Modern CPC6128 SPREAD-SHEET System

This is the sister program to the famous MASTERFILE 128, and is a fast and friendly spread-sheet program with high capacity (over 7,000 cells) and impressive speed. Like MASTERFILE, it is entirely machine coded. Like MASTERFILE, it needs just one disc drive and does not use CP/M (sorry again, PCW8256 people); and it uses the same optimised RAM bank-switch code. "Another exceptional utility from Campbell ..." said Popular Computing Weekly of the original MASTERCALC. The "128" edition is even more powerful.

All spread-sheet systems allow manipulation of an array of numeric data. What sets MASTERCALC 128 apart from the rest are these features:

Full-screen or split screen windows; variable column display width; variable column formats, 0-7 decimal places; columns can be formatted individually; ultra high-precision floating point arithmetic; direct totals and sub-totals; up to 99 relocatable formulae (usually 10 is ample!); formulae up to 75 characters, any arithmetic expressions, plus conditionals, relative cell references; instant highlight of computed data; store text anywhere; pop-up help menu; 40/80 column mode; auto cursor-advance; text output to printer or to disc for word-processing; fast hi-res histogram of any 3 rows; Epson screen dump; detailed manual with illustrated tutorial.

For the enthusiast, there is even USER BASIC access to the cell data, so that special operations can be performed. For example, it is possible to ship data to/from MASTERFILE 128.



UPDATES: Users with original MASTERFILE 464/MASTERCALC can update to "128" by sending us their original disc (which we re-record) or tape (which we exchange for "128" disc). The new versions will read old-version files without problems.

RAM-upgraded CPC464/664: Yes, MASTERFILE/CALC 128 will also work with DK'tronics 64K RAM on CPC464/664. We can even provide the software on tape if you get your RAM before your disc drive!

SUPPORT: Our technical support department are here to help — but please send SAE with any written queries. Unlike most software marketing companies, we have the original programmer right here at the end of the telephone.

64K USERS: Original MASTERFILE 464 and MASTERCALC are still available at "club" prices. For each program there is also "Extensions" option which allows some of the "128" features — but not of course the large file size. "MPX" adds data export, file merge, and User Basic to the MASTERFILE 464, while "MCX" adds data export and User Basic to the original MASTERCALC.

	tape	disc
MASTERFILE 464	£21.25 ☐	£25.45 ☐
MASTERFILE 464 + MPX	£26.25 ☐	£29.95 ☐
MASTERFILE 128		£33.00 ☐
MASTERCALC (original)	£21.25 ☐	£25.45 ☐
MASTERCALC + MCX	£26.25 ☐	£29.95 ☐
MASTERCALC 128		£33.00 ☐
MASTERFILE/CALC update	Original tape + £13.95 ☐	Original disc + £10.00 ☐

NAME ______________________

ADDRESS ______________________

Send your order or telephone (01 508 5058) with your VISA/ACCESS/EUROCARD/MASTERCARD number.

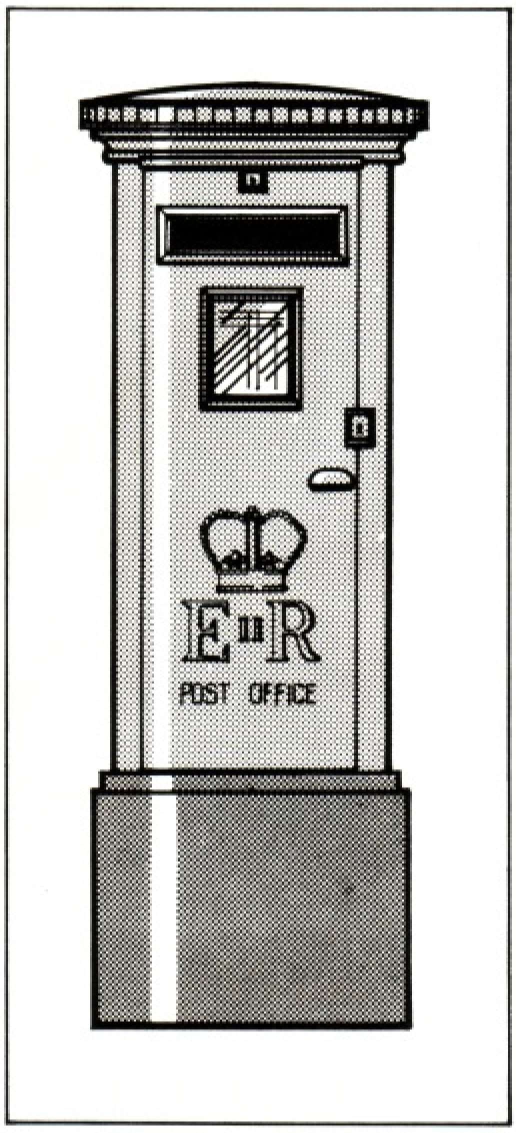
Prices include VAT & P&P anywhere within Europe.
Our normal service is 1st class return of post.
Please make cheque payable to "Campbell Systems".

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CAMPBELL SYSTEMS
CS
(Dept. ACU)
57 Trap's Hill,
Loughton, Essex IG10 1TD

Please bear in mind that the views expressed herein are not necessarily those of Amstrad or Amsoft. Be assured that all your views are given thorough consideration. This letters section is the Amstrad Computer User's own forum.

Write to reply



Wot! No experts?

I am really beginning to wonder whether there is anyone in the whole world who understands Amstrad computers, or in fact cares at all once the customer's money has been taken.

I ordered both the 8256 and the 6128 plus the DMP 2000 from Dixons in October last year, and although both computers were delivered promptly the printer has still to arrive.

At the time of purchase I asked from several sources one very straightforward question – namely: "Could I exchange discs from one machine to the other on CP/M?"

Every "expert" asked – including a phone call to Amstrad – said yes, providing that I understood that this was only possible with CP/M programs.

Since that moment of trust in October I am still trying to find out the secret of how to do it, and in fact whether there is anyone out there who knows? I have written to Amstrad, but no answer. I have telephoned Amstrad, but have been passed between people, none of whom knew what to do, and eventually I was left stuck with a switchboard operator trying to find a so called expert who might know.

I wrote to Dixons head office, both about none delivery of my printer, and to see if they knew the secret. That was two months ago and I have had no reply.

I read your comments in the February issue of *ABC* that it would work if I formatted all my discs on the 6128, and I eagerly tried this, but still no success. Now I am a member of the Amstrad User Club and it will be interesting to see whether this is any real help in getting this very aggravating problem solved.

Alan Maynard,
Bexhill on Sea,
Sussex.

ACU: *A disc that has been written in DATA format of the CPC6128 can also be read by the PCW8256. However it is not possible to COPY this format using DISCKIT on the PCW. Instead you must copy the files by PIPing them on to a disc that has been already formatted using DISCKIT.*

It is a bit confusing isn't it? Some programs which have been installed to use the 90 column screen format on the 8256 won't work on the 6128.

Robots in arms

I recently acquired an Amstrad CPC464 and would be interested to learn whether any companies or individuals have done any work on its use in robotics. In particular I would like to know if any work has been carried out using Lego model kits.

I understand Spectravideo sell a robot arm for use with MSX computers and was wondering whether anything similar was available for the CPC464.

D. Townsend,
Radcliffe-on-Trent,
Nottingham.

ACU: *Spectravideo are working on an Amstrad version of the arm but it is some way off. You can contact them on 01-330 0101. Lego are working with computers but at a very rudimentary level and based on BBC Micros.*

Sorry, overseas

I noticed that in the June issue of *ACU* you say that the user club can be joined from overseas. You also point readers to the coupon at the back of the magazine. Since this is not an order form to join the user club, and since we as the official user club are not allowed to deal with people from overseas, I would be most grateful for your comments.

J.E. Ainsworth,
Amstrad User Club and Amsoft,
Sunderland,
Tyne and Wear.

ACU: *Sorry. We were under the misunderstanding that overseas users could now join the club. Thank you for pointing out our mistake. The order form at the back of the magazine allows overseas readers to subscribe but does not offer the other benefits available to the user club.*

It would appear that this is the best way that overseas readers can be sure of a regular copy.

Speccy aid

I have a Spectrum Plus computer and I am thinking about adding a joystick. On reading a friend's May issue of *Amstrad Computer User,* I was pleased to see an article on joysticks. Among those mentioned was one called Gunshot which is highly recommended. I have looked around a few computer shops but unfortunately I could not find this one.

Please could you let me know where I can buy one and as I am just a beginner with my computer, is a Kempston interface compatible with the aforementioned joystick and computer?

P. Abrook,
Moordown,
Bournemouth.

ACU: *Good grief, Amstrad buys the rights to Sinclair computers and all of a sudden we start getting letters from Spectrum owners. You can buy the Gunshot Joystick from Vulcan Electronics who are on 01-203 6366.*

The Kempston interface will work with the Plus but only the newest design will work with the Spectrum 18.

Spelling things out

Congratulations on an excellent magazine. *(Creep – Ed).* I was wondering if you could *(Oh, no wonder – you want something – Ed)* give me any advice about spellbound, one of Mastertronics MAD games?

In your review of this game you mention shuffling objects about and interfacing with other characters to open a door to the first level. Does this mean the third floor, the first floor or the basement? Also which items do I have to

shuffle about and what do I have to do with each of the characters?

J.C. Longley,
The Junior School,
Ramsgate,
Kent.

ACU: By the first floor we meant the floor you start on. In the game this is the third floor. To fully explain how to solve Spellbound would ruin the game and take far too much space. Keep an eye on the Hackers Haunt.

More Sinclair letters

I am pleased to hear of Mr Sugar's recent acquisition of Sinclair Computers.

I own a QL *(I had one of those once – Ed)* which I have found to be quite remarkable *(Yup – I'd have described it like that – Ed)* as far as QDOS and Superbasic goes. I believe that if Mr Sugar produced a machine in the same class as the Atari 520ST which supported the advanced version of the Superbasic language – plus a compiler built in on ROM – then sales would exceed those of his word processor. I will be the first person to buy such a machine.

A.R. Watkin,
Southampton.

ACU: The bad news is that the QL is dead – Amstrad has sold off the remaining stocks. There are rumours of a machine called the QLT (QL Two) from a new company.

Words and pictures

We are using a CPC464 Amstrad in our business mainly on word processing and for listing on the Masterfile. For word processing we use Amsword.

We would like to incorporate simple graphics which can be produced on the screen after entering Basic from Amsword but cannot find a way of transferring these into the word processing format. Can this be done and, if so, how? Can it be done with Masterfile?

Alternatively do you know of a graphics package that could be merged with Amsword? We use a daisy wheel printer.

R.D. Cullum,
Publications Services,
Worthing.

ACU: The only word processor we know of which allows you to use graphics is Micro Script from Amsoft. This runs under CP/M so if you don't already have a disc drive you will need to splash out. You will also need a dot-matrix printer, preferably Epson-compatible.

Dump dilemma

Connected to our Amstrad we have a Shinwa CP-80 terminal printer. Could you please solve my problem by recommending me a screen dump?

Simon Steele,
Blackwood,
Gwent.

Please, oh please can you help me – I'm desperate! I bought a Star SG-10 printer several months ago to replace the disappointing DMP-1. One of the main reasons why I chose the Star was because I was assured it could print true-scale, 1:1 screen dumps.

Since my main use for a screen program is to plot crystal structure models in various orientations, true scale is important to me. I cannot afford to change printers again, even if there is another make which can do true scale dumps and for which the necessary software is available.

B.A. Cressey,
Reading,
Berks.

ACU: Screen dumps vary from printer to printer because the shape of the pins varies. Your best bet is to adapt an existing listing. We printed a screen dump in the January issue.

REMs

Schizo magazine

Until recently, I was a happy, contented *ACU* club member who looked forward to receiving my magazine every month – this is no longer so.

Suddenly I find the magazine being swamped with pages of business editorials and numerous business related advertisements which I, as a CPC464 owner find absolutely of no interest. The May issue contained no fewer than 20 pages of business features. Surely now is the time to give the business computers their own magazine and leave the ACU magazine for the ordinary home computer enthusiasts? (Mr T. Smith, N. Humberside.)

***ACU:* There will come a time when the two magazines split but for the moment we will cover all the Amstrad machines. The business supplement is an addition to *ACU*. *ABC* and *ACU* together are far bigger than any rival magazine. No doubt when we do split readers will complain that they now have to buy both titles.**

Incompatible 6128

Your Gallup chart suggests that the 664 and 6128 are completely compatible, but I have found this not to be so.

While owning the 664, I bought Dark Star by Design Design which will not work on the 6128. The cassette version refused to load and when I had it transferred to disc, the program always crashed after the first game. (Robert Leslie, Surrey.)

***ACU:* Dark Star is an exception which proves the rule. Design Design use a special mode, like the one we talked about in the January issue. So far as we know this is the only type of program which will work on the 664 and not the 6128.**

6128 not exploited

Could you please send me a list of games for the CPC6128 only. I have owned the 6128 for six months now and have not seen any games just for the 6128. (D.R. Levy, Merseyside.)

***ACU:* The first game to really fit the bill is Meltdown from Alligata. The Rainbird adventure The Pawn, will be a 6128 only program. There are some games which run under CP/M+ but that is about it.**

Dial a star

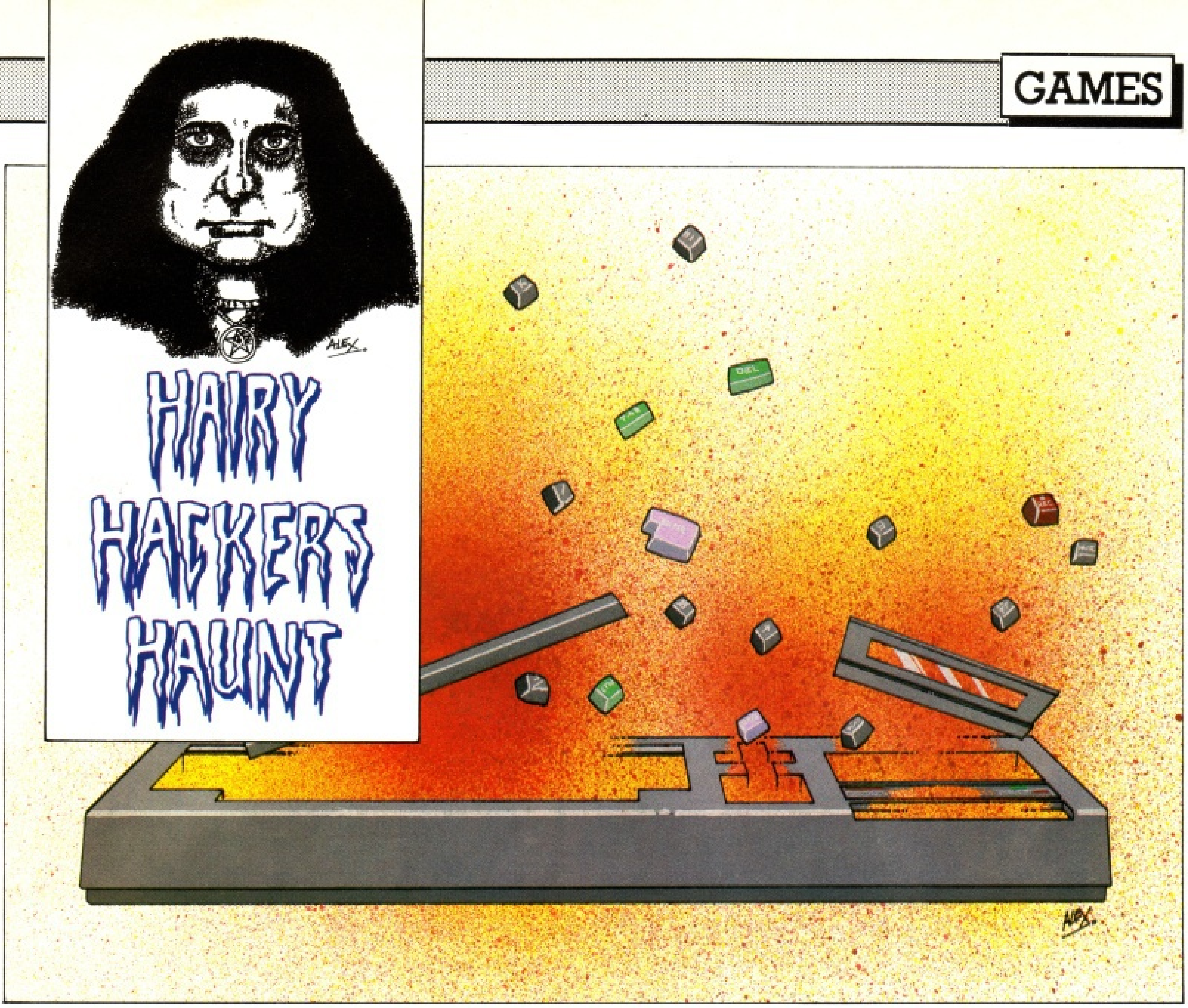
I would be grateful if the details of my viewdata/bulletin board can be included in the communications news section of your next publication.

The system has been primarily set up with astronomy as its central theme. Although many of the system's features prove to be of genuine use to serious amateurs, I equally intend the system to be of real interest and educational value, particularly to the young. The database has been constructed with sections that appeal more readily to junior stargazers, and more are planned. (B.J.G. Spencer, Prometheus.)

***ACU:* You can call the system on 01-300 7177.**

REMs


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Programmers' Pot Pouri

Vax returns to pull apart the latest software

Another column? By heck, that was quick. Doesn't time fly when you're enjoying yourself, honeymooning on the Costa Bomba. Still, without further ado, any extraneous waffle or other mindless banter and with absolutely no preamble whatsoever, we'll get right down to the column.

Nice to hear that people are doing well with the joystick mod. The wife won't touch mine with a barge-pole, and swears by her old Atari stick. You often find her there, crouched and blaspheming.

Poking around

The issue before last saw a great interest shown in the game Defend or Die – largely by the editor. Just in case you missed it, this was in the bit where we dished out the awards. Well, diving in with my best crawl, here are a few pokes for Defend or Die. (Don't funny things happen when you type pokes in wrong?)

As usual, wind past the loader and run this program:

```
10 OPENOUT"!d":MEMORY &3FFF
20 LOAD"!
30 POKE &60CF,0:          REM Infinite Li
   ves
40 POKE &5E01,0:          REM Infinite Sm
   art Bombs
50 POKE &5DE7,77:         REM Smart Bomb
   on top fire button
60 CALL &4000
```

There, with any luck the editor will now smile on me from a great height, thus ensuring another month's column despite your protestations.

Leaping from subject to subject with the agility of a bionic mountain goat, users of CP/M+ might find a use for the following. Type 'DIR *.COM [EXCLUDE' and you get a listing of everything that isn't a COM file. Amazing what you find when you read the manual.

Still on CP/M, if you load a .COM file into memory at &100 with UTOPIA, you can load and disassemble it without leaving MAXAM. Much better than DDT or SID if you just want to look and change. You can save off the result with the SAVEA command too.

If you want to put a Protext ROM or similar on your machine, and have realised that they're cheaper as a ROM on its own, why not bung the ROM in your Amstrad RS232 interface. This

```
10 '       PROGRAM 1  v1.1
20 'ELITE HACK PROGRAM C.WOOD 5/5/1986
30 'FOR 'METROPOLITAN' VERSION ONLY
40 '
50 MEMORY &3AFF:MODE 1:BORDER 0
60 INK 0,0:INK 1,10:INK 2,18:INK 3,8
70 WINDOW #1,14,26,12,12:WINDOW #2,14,26
   ,14,14
80 LOAD"!elite1"
90 POKE &3BD1,247:POKE 48,195:POKE 49,0:
   POKE 50,160
100 FOR n=&9FDF TO 1E+09:READ a$:IF a$<>
   "END" THEN POKE n,VAL("&"+a$):NEXT
110 CALL &9FDF,1486
120 DATA A4,5A,5A,4B,4A,21,DF,9F,11,00
130 DATA A0,06,1B,1A,CB,41,28,03,86,18
140 DATA 01,AE,12,1C,10,F3,23,0D,20,EA
150 DATA C3,00,3B,D7,5B,63,56,15,9B,56
160 DATA 6F,84,96,74,CC,8C,BF,A2,54,DC
170 DATA 74,77,F5,BF,23,40,DE,35,41,EA
180 '      *** START OF POKES ***
190 REM ***-------NO ENERGY LOSS-------*
   **
200 DATA 32,be,43
210 REM ***------INFINITE MISSILES------
   -***
220 DATA 32,11,46
230 REM MISSILES BLOW UP SPACE STATIONS
240 DATA 32,49,94
250 REM SPACE STATIONS LAUNCH THARGOIDS
260 DATA 32,26,93
270 REM ONE HIT TO DESTROY SPACESHIPS
280 DATA 32,a9,87
290 REM NO LASER TEMP RISE
300 DATA 32,51,87
310 REM INFINITE FUEL
320 DATA 32,01,74
330 REM NO HYPERSPACE RANGE LIMIT
340 DATA 32,0d,71,32,17,71
350 REM CONSTANT GALACTIC HYPERSPACE
360 DATA 32,f9,70
370 REM ***-------CONSTANT ESCAPE POD---
   ----***
380 DATA 32,2c,46
390 REM ***-------NO CARGO LOSS ON ESCAP
   E-------***
400 DATA 32,48,46
410 REM ***-------INFINITE CARGO-------*
   **
420 DATA 32,b0,50
430 REM ***-------CONSTANT ENERGY BOMB--
   ----***
440 DATA 32,d4,30
450 REM ***-------NO ENERGY BOMB SCREEN
   FLASH------***
460 DATA 3e,c9,32,e3,30
470 REM INFINITE CASH
480 DATA 3e,03,32,75,fe,3e,18,32,83,fe
490 REM ***------E.C.M. SYSTEM JAMMER---
   ---***
500 DATA af,32,9b,5a,32,a5,5a,3e,18,32,e
   d,92
510 REM ***------CLOAKING DEVICE------**
   *
520 DATA 3e,21,32,da,5a,3e,f6,32,de,5a,a
   f,32,ed,5a
530 REM INDESTRUCTABILITY
540 DATA 3e,c3,32,2a,13,af,32,81,85,32,6
   0,88
550 REM ***------LOAD ALTERED CHARACTER-
   -----***
560 DATA 3e,1f,32,ea,5c
570 '       ** END OF POKES **
580 DATA c3,60,00,END
```

Program 1: The Elite listing as promised last month by ZZKJ

chucks your guarantee and means you can't use the serial port from AMSDOS, but using the port from CP/M still works fine and is much easier anyway.

By the way, has anyone noticed that the command |ROMCAT,–1 causes the Amstrad RS232 ROM to come up with a list of people who wrote the thing? Where have you seen the name Sally Tyler before?

Who remembers Psychedelia? Sort of a kaleidescope (two awkwurd wurds I got rite) for a 464 and bored owner with nothing better to do. Eyes down for a poke to stop the big white message mucking your screen up. Of course, you can't see what you're changing, but who cares?

```
10 OPENOUT "!d":MEMORY &3FFF
20 LOAD"!",&4000
30 POKE &576B,0
40 CALL &4000
```

You know the routine by now – wind past the old loader and run this one. How many more times do I have to tell you lot?

Speaking of psychedelics, type in this spritely little beaut. More interesting than one of those bubble lamps, if you like that sort of thing. Tough titles on those people with green screens.

```
10 DEFINT a-z
20 MODE 0:INK 0,0:BORDER 0
30 pns=15:brk=0
40 xsize=64:ysize=64:xmax=638-xsize:ymax
   =398-ysize
50 x=320:y=200
60 stepx=(RND*8-4)*4:stepy=(RND*8-4)*4
70  WHILE brk<17
80    RANDOMIZE TIME
90    ORIGIN 0,0,x,x+xsize,y,y+ysize:CLG
    pn
100   x=x+stepx:y=y+stepy
110   IF x<0 THEN stepx=8-stepx-8:x=0
120   IF x>xmax THEN stepx=8-stepx-8:x=x
    max
130   IF y<0 THEN stepy=8-stepy-8:y=0
140   IF y>ymax THEN stepy=8-stepy-8:y=y
    max
150   i$=INKEY$:IF i$=CHR$(127) AND brk=
    0 THEN brk=1
160   IF i$=" " OR RND<0.01 THEN stepx=(
    RND*8-4)*4:stepy=(RND*8-4)*4
170   IF i$=CHR$(13) THEN CLS
180   pn=pn MOD pns+1
190   IF brk<>0 THEN INK pn,0:brk=brk+1:
    GOTO 220
200   inc=ABS(y/15)
210   INK pn,inc
220 WEND
230 MODE 2:INK 1,26
```

This works, it came straight off my 664, so don't blame us if you can't type.

Now then, thanks to ZZKJ, here are some megasneaky pokes that worm their way round the DJL Speedlock (10p in the swear box). At last you can play TLL without converting Tornados to mashed trash at Mach 2.

Type in the following and see how well you can fly it. Especially when you don't have to worry about minor things like hitting trees or turning a Tornado into its tunnelling machine mode.

```
10 REM TLL HACK PROGRAM (BY ZZKJ)
20 REM REWIND TAPE TO START, RUN PROGRAM
    AND START TAPE
30 MEMORY 9999:LOAD"!
40 FOR n=50000 TO 1E+09:READ a$
50 IF a$="END" THEN POKE &BC0E,201:CALL
   50000
60 POKE n,VAL("&"+a$):NEXT
70 DATA 3E,C3,32,E2,3B,21,64,C3,22,E3,3B
   ,21,FF,AB,11,40,00,C3,B1,3B
80 DATA F3,21,17,9E,22,77,02,3E,EC,32,FF
   ,01,F1,C9,3E,57,32,2D,B5,AF
90  DATA 32,7A,91 :                 REM I
   NFINITE LIVES
100 DATA 32,C8,A8,32,9B,A9 :        REM I
    NFINITE BOMBS
110 DATA 32,A2,A6 :                 REM I
    NFINITE FUEL
120 DATA 32,9B,90,3E,18,32,9C,90 : REM I
    NFINITE TIME
130 DATA 21,AF,32,22,DA,90,21,3D,8F,22,D
    C,90 : REM INVULNERABILITY PLUS LAND
    ING
140 DATA C3,F5,8F,END
```

Note his very convenient idea of allowing you to land, not just sink out of sight below the level of the runway. Thanks for helping out last month ZZKJ, and sorry if people thought that great rendition of me was of you. (I've got more hair than that really).

My mate Cliff is writing a few pokes for Jet Set Willie so that it will go on a 6128. He isn't quite finished yet – his last attempt had a random teleport element to it, so you'll have to wait for next month to see if it works yet. What you might call a Cliff hanger.

While tinkering with a D'ktronics Sillydisc and ROM pack, I discovered that plugging the Sillydisc ROM on its own in the back of my 6128 gave me a 62k RAM disc. Maybe this could be a marketable product, if you're listening Mr D'k.

I have noticed, much to the liking of ardent feminists, that my little sister is much better at 3D Grand Prix than my brother. My parting thought for the month is: If a woman wants to learn to drive, don't stand in her way. Keep the pokes coming!

ACU

When the press use such words as 'Phenomenal', 'Outstanding', 'Ideal' and 'Worth Every Penny', they've obviously discovered something rather special.

But when that something special turns out to be a product in which they are already expert, then it must be something very special indeed.

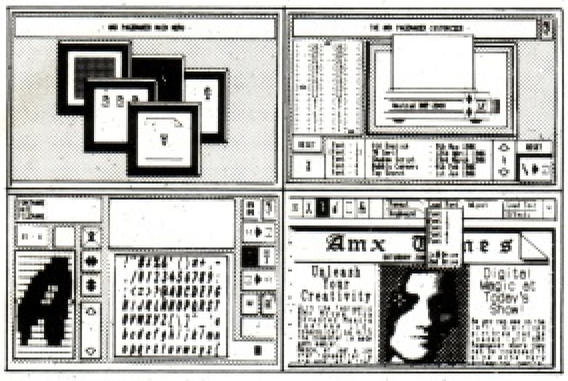
The object of their enthusiasm is AMX Pagemaker – a revolutionary software program that will produce newspapers, posters, leaflets, notices and hand-outs – in fact anything where text and graphics are required, to an extraordinary professional standard.

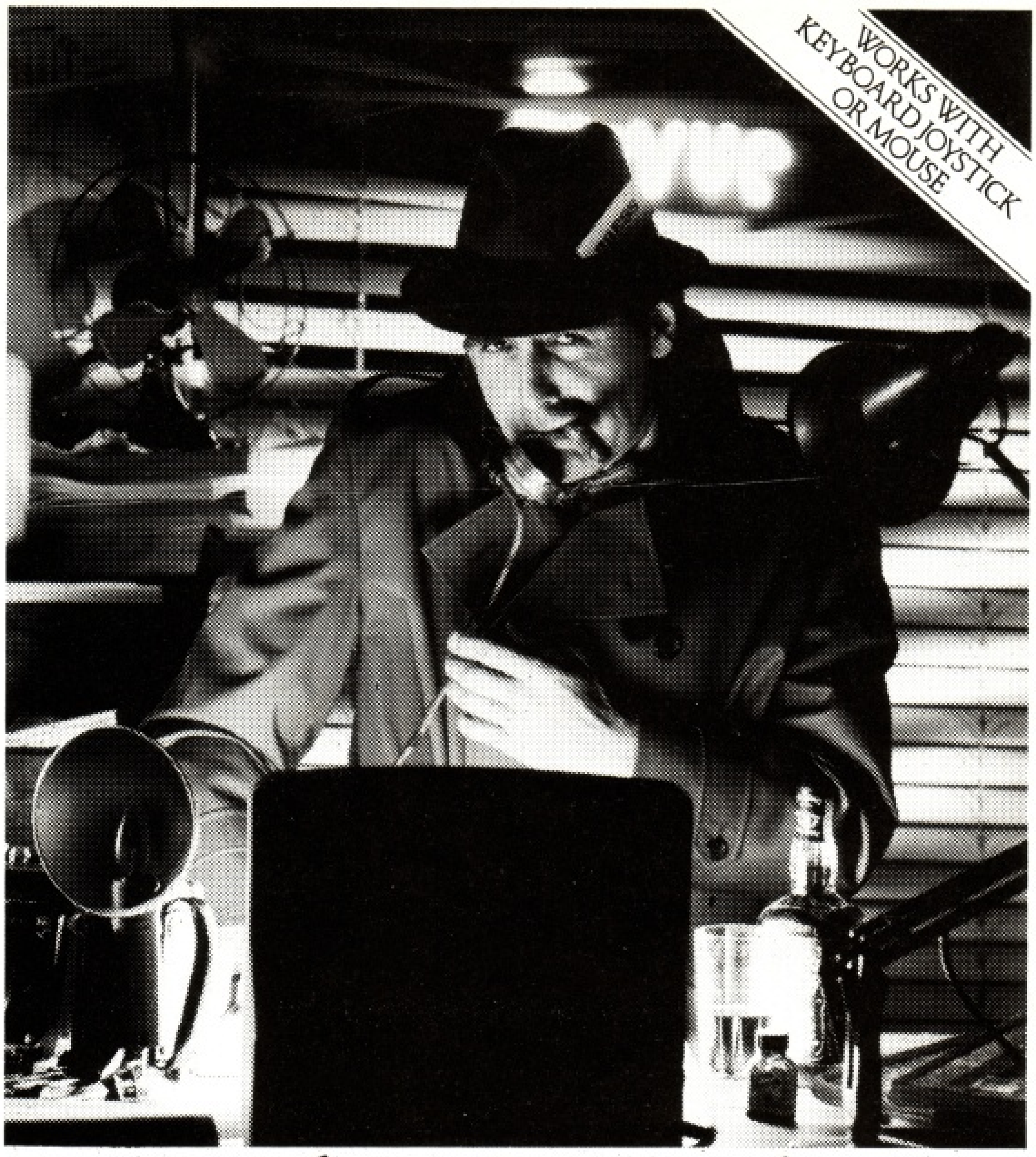
It's a complete graphics design system and word processor rolled into one. It has real time graphics with fast continuous scrolling up and down an A4 page and uses Mode 2, the highest graphics resolution on the Amstrad CPC computers.

READ ALL ABOUT IT.

You can type directly onto the screen, with any of the 16 typefaces supplied or design your own, alternatively, you can load in any ASCII file or a word processor file, from programs such as Tasword, Amsword, Maxam, or Protext, with fully automatic on-screen text formatting during loading.

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The program that's making front page news.

EXTRA, EXTRA.

There are outstanding facilities for drawing, spraying and painting, using either the patterns supplied, or your own pattern designs. A screen conversion routine is included allowing screens created in Mode I and O to be used within the Pagemaker. The cut and paste facilities include copying, moving, rotating, stretching and a fantastic zoom is also available.

The previewer allows you to view three A4 pages at any time before work is output to a wide range of dot matrix printers including: Amstrad DMP 1000-2000, Epson FX/RX/LX/LQ, Canon PW-1080, Kaga KP810, Mannesman Tally MT-80+, Seikosha SP-1000A, Star Delta, Star SG10 and any that are compatible with the above.

The AMX Pagemaker requires: a) Amstrad CPC618 or b) Amstrad CPC664+64K Minimum add-on Ram or c) Amstrad CPC464+64K Minimum add-on Ram + disc drive, DK 'tronics Ram boards or compatible.

Let's leave the last word to the press.

*"Pagemaker" is phenomenal – it lends itself to creating anything where text and graphics are involved – notices, posters, leaflets, hand-outs, newsheets. Packages like this have been the province of the 16-bit micros until now, this product is worth every penny of £49.95."

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*'Educational Computing', January 1986.

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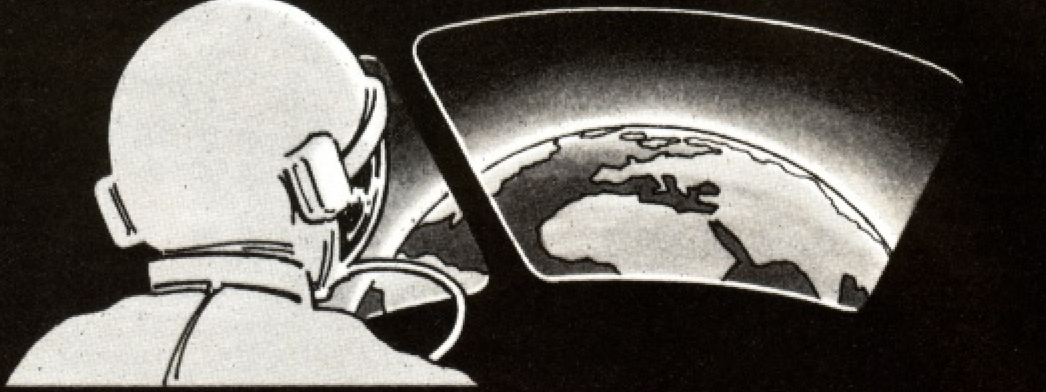
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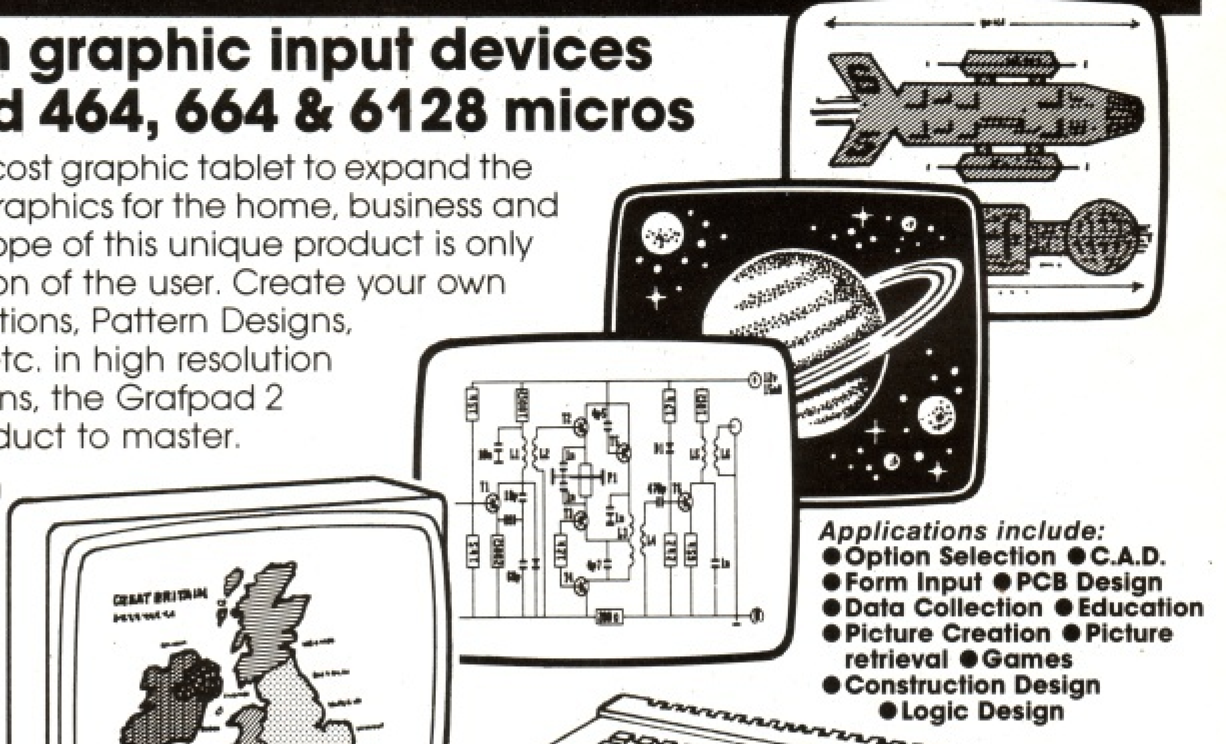


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What it offers the Amstrad user . . .

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Sending mailbox messages to other subscribers, whose numbers are rapidly growing, is the cheapest form of communication possible. You can send a message of any length to another mailbox for less than the cost of a first-class stamp. And it doesn't cost a penny more to send the same message to 500 different mailboxes! Even a message sent to a mailbox on the other side of the world only costs 30p.

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The number of bulletin boards is growing rapidly. The only snag is that the vast majority are single-user boards – which means lots of other people are also trying to make contact and all too often all you get is the engaged tone. But with the MicroLink bulletin board there is no limit to the number of people using it at the same time. And no limit to the number of categories that can be displayed on the board.

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The majority of MicroLink subscribers can connect to our mainframe computer in London by making a local phone call. This is possible because they use British Telecom's PSS system, which has access points all over Britain. A local phone call is all you need, too, for direct access via MicroLink to all the other countries belonging to the international Dialcom system.

Telemessages – at a third off

The modern equivalent of the telegram is the telemessage. Send it before 10pm and delivery is guaranteed by first post the following day (except Sunday). The service was intended for people phoning their message to the operator, which costs £3.50 for 50 words. But you can now use it via MicroLink, for only £1.25 for up to 350 words! For an extra 65p your message can be delivered in an attractive greetings card.

Go teleshopping on your micro

With MicroLink you can study the British Rail timetable – and then buy your ticket in advance. You can book theatre tickets. And even order a bouquet of flowers. It's all part of the tele-shopping revolution!

Send and receive telex messages

With MicroLink you can turn your micro into a telex machine, and can send and receive telex messages of any length. You will be able to communicate directly to 96,000 telex subscribers in the UK, 1½ million worldwide – and even with ships at sea via the telex satellite network. Business people can now send and receive telexes after office hours, from home or when travelling.

What does it all cost?

Considering all the services you have on tap, MicroLink is remarkably inexpensive. You pay a once-only registration fee of £5, and then a standing charge of just £3 a month. On-line costs are 3.5p a minute (between 7pm and 8am) or 11p a minute during office hours. There is an additional 2.5p a minute PSS charge if you are calling from outside the 01- London call area. Charges for telex, telemessages and storage of files are given on the next page.

How much it costs to use MicroLink

Initial registration fee: £5.

Standing charge: £3 per calendar month or part.

Connect charge: 3.5p per minute or part – cheap rate; 11p per minute or part – standard rate.
Applicable for duration of connection to the Service. Minimum charge: 1 minute.
Cheap rate is from 7pm to 8am, Monday to Friday, all day Saturday and Sunday and public holidays; Standard rate is from 8am to 7pm, Monday to Friday, excluding public holidays.

Filing charge: 20p per unit of 2,048 characters per month.
Applicable for storage of information, such as telex, short codes and mail files. The number of units used is an average calculated by reference to a daily sample.

Information Databases: Various charges.
Any charges that may be applicable are shown to you before you obtain access to the database.

MicroLink PSS service: 2.5p per minute or part (300 baud); 3p per minute or part (1200/75 baud).
Only applies to users outside the 01-London call area.

Telex registration: £10.

Outgoing telex: 5.5p per 100 characters (UK); 11p per 100 (Europe); 18p per 100 (N. America); £1.25 per 400 (Rest of world); £2.75 per 400 (Ships at sea).
Deferred messages sent on the night service are subject to a 10 per cent discount.

Incoming telex: 50p for each correctly addressed telex delivered to your mailbox. Obtaining a mailbox reference from the sender incurs a further charge of 50p.
It is not possible to deliver a telex without a mailbox reference. If a telex is received without a mailbox reference the sender will be advised of non-delivery and asked to provide a mailbox address.
Each user validated for telex and using the facility will incur a charge of 6 storage units a month. Further storage charges could be incurred depending on the amount of telex storage and the use made of short code and message file facilities.

Telemessages: £1.25 for up to 350 words.
Telemessages can be sent with an illustrated greetings card for 65p extra.

Radiopaging: No charge.
If you have a BT Radiopager you can be paged automatically whenever a message is waiting in your mailbox.

International Mail: For the first 2,048 characters – 20p to Germany and Denmark; 30p to USA, Australia, Canada, Singapore, Hong Kong and Israel. For additional 1,024 characters – 10p; 15p.
These charges relate to the transmission of information by the Dialcom service to other Dialcom services outside the UK and the Isle of Man. Multiple copies to addresses on the same system host incur only one transmission charge.

Billing and Payment: All charges quoted are exclusive of VAT. Currently all bills are rendered monthly.

Software over the telephone

MicroLink is setting up a central store of software programs which you'll be able to download directly into your micro. The range will include games, utilities, educational and business programs, and will cover all the most popular makes of micros.

Talk to the world – by satellite

MicroLink is part of the international Dialcom network. In the USA, Australia and a growing number of other countries there are many thousands of users with electronic mailboxes just like yours. You can contact them just as easily as you do users in Britain – the only difference is that the messages from your keyboard go speeding around the world via satellite.

What you need to access MicroLink

You must have three things in order to use MicroLink: a computer (it can be any make of micro, hand-held device or even an electronic typewriter provided it has communications facilities), a modem (it can be a simple Prestel type using 1200/75 baud, or a more sophisticated one operating at 300/300 or 1200/1200 baud), and appropriate communications software.

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ROUND THE HOUSES

GLOBAL SOFTWARE

The little software house which took on the Geneva convention and lost has now got some mega adventures in the pipeline. Dr Jon Thackery was behind many of the famous Acornsoft adventures.

Now with a little help from Locomotive Software the programs are being converted to run on the Joyce – and maybe the Arnold – providing plenty of puzzles for the hardened adventurer.

ARNOR

If one company can be credited with creating the market for Amstrad ROMs it must be Arnor – a name taken, with permission, from The Lord of the Rings.

The Protext, Prospell and Promerge combination of word processor, spelling checker and mail merge program have won nothing but praise from Arnor's customers – indeed this article was written using Protext. Even their customer support is good.

Now due to popular demand Arnor is moving to the Joyce (and moving to new offices as well, but that's a different story).

The first program will be a version of Prospell for the PCW. This will work with LocoScript, WordStar, SuperWriter and the like. It will be launched at the Amstrad Show in June for around thirty quid.

Later in June there will be an 8256 version of Protext which will incorporate both spelling and merging.

This will no doubt work with both the standard printer and anything you care to attach to the CPS interface.

The program weighs in at a hefty £80 but then you Joyce owners are a wealthy lot.

VIRGIN

Nick Alexander, MD at Virgin games, has watched the company grow over the past three years. Its reputation for being one of the best was reflected in a recent *ACU* poll when readers voted them Number One software house.

This is quite an achievement for a company which has only released two Amstrad titles. There is a lot more brewing, partly due to the takeover of two rival software houses – New Generation Software and Leisure Genius.

Virgin has three titles poised for release. The first is Shogun, which initially looks a bit like Sorcery but requires more strategy with nasties which can be won over.

The second title is Atlantic Challenge which will be released, programming deadlines willing, to coincide with the second attempt to break the record for a sea crossing of the Atlantic by a fare-paying passenger. Once again the passenger is Virgin boss Richard Branson.

The third game is Dan Dare, based on the Eagle comics character – this is Strangeloopesque. There are 128 rooms divided into four main sections.

Each section contains a piece of a bridge which has to be built so that you can rescue a colleague. This looks like it will be the biggest Virgin success yet – the Commodore 64 version has taken two years to develop.

With the Leisure Genius takeover Virgin have inherited two titles for release soon. Monopoly should whet the appetite of any prospective property barons and Scalextric will tempt budding racing drivers.

The New Generation buy-out has sired Trashmam, Travel with Trashman and Jonah Barrington Squash. Trashman is in Mode 1, cute and will be ready for release very soon. Virgin are bound to be big on the Amstrad scene.

FIREBIRD

Takeovers seem to be flavour of the month. Firebird now has the marketing rights to Odin's games Nodes of Yesod and Robin of the Wood.

These have been long awaited and by all accounts are worth it. They are 2D spritey games, In Nodes you play a little spaceman with a pet mole in tow, exploring caves and collecting alchemes.

Robin is good at just that – robbin' the rich to give to the poor.

In a maze-like Sherwood forest you will find the Sheriff's men, druids and the odd hedgehog. (In the days before the M1 and fast lorries there were a lot of hedgehogs.)

Firebird Gold has passed the Amstrad by, Elite being the only exception. There are at least two new titles being prepared to set that right.

The first is Empire which gets a plug because it is being written by a friend of the Editor. This is a 2D space game with a 3D planet sequence.

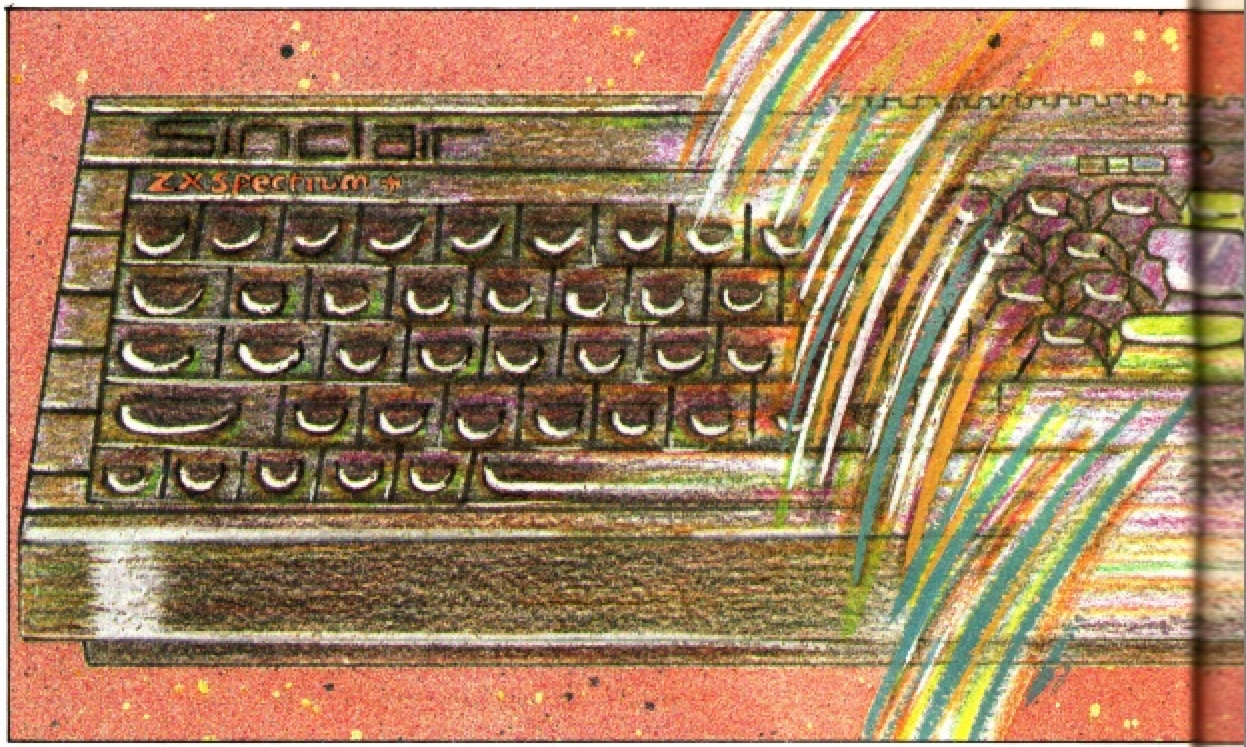
You have the everyday job of saving the universe. There are missions to complete, medals to be won and plagues to be cured – but I'm telling you the plot.

The second Firebird title has an unpronounceable Sioux Indian name. This is not surprising since there were so many Indian tribes, each with a different tongue, they often resorted to sign language. But that tells you nothing of the game.

Well it's 3D, wireframe, with graphics fast enough to shame Design Design. You control a robot which roams the planet surface, running between tall buildings and capturing other robots by taking over their thoughts, a bit like one of the games in Comet.

All these ideas being ripped-off are enough to make you *Paranoid.* You then view the world through the eyes of the captured robot. This game is some way off being released but wait for it – it's gonna be a biggie.

ACU



ZX

There are two methods of getting Spectrum code into an Amstrad – the expensive RS232 way and the Peter Green way

Once upon a time there were two Computer Industry Personalities. One CIP was cerebral and had a hairy chin, the other was streetwise and hairy all over. The cerebral CIP not only kept large sections of the media amused, but he also virtually invented the British home computer industry with clever ideas like the ZX81 and the Spectrum.

Unfortunately he also had a lot of silly ideas – microdrives, the QL, the C5 – and ended up selling his business to the streetwise CIP, who will probably also take his place on Spitting Image.

The moral of this story is that the editor of *Amstrad Computer User* has asked me to write about Spectrum tape firmware and screen layout.

Getting Spectrum tapes to load into an Amstrad is more than just an academic exercise. A well-written piece of machine code should be easily transferrable from one to the other – witness the range of Ultimate conversions and the fact that Gargoyle Games converted Dun Darach to the Amstrad in 10 days. Of course the professionals can afford to port data from one micro to another, but few people reading this will want to pay out for an Amstrad RS232 interface as well as a ZX Interface 1.

The program given here means you don't have to. Both micros rely on software routines to unscramble the tones that make up a cassette signal, rather than using hardware (monostables and so on) to time the pulses. This means that by altering the software, either computer can be persuaded to read or write data on tape in the other's format.

Essentially, to produce the ZXLoader program I typed in the loading routines from Logan and O'Hara's Complete Spectrum ROM Disassembly (published by Melbourne House, £9.95), and altered the parts that deal directly with the Amstrad's hardware. If that sounds easy, it was. Starting from scratch, the entire program took just two days to write, alter, and debug.

This version is tailored specifically to load Spectrum screen dumps into an Amstrad and convert them into a Mode 1 screen, an application that I needed urgently, but you could easily alter it to transfer any binary file for disassembly to source code and conversion. Apart from giving an insight into how to access the Amstrad hardware directly, the program also shows how the alternate register set can be used by a program that does not require interrupts to be enabled.

A load off my mind

Listing 1 gives the source code for the ZXLoader, written using Arnor's Maxam but with obscure six-letter labels for compatibility with inferior assemblers. The Spectrum's tape system is much simpler than the Amstrad's, and the listing has line spaces inserted to split up the logical blocks which we can examine in order. The comments in capitals are firmware jumpblock calls, complete details of which are available in the Amstrad firmware specification, SOFT158.

ZXLoader starts at line 2000. First a SOUND RESET makes sure the computer is silent, otherwise you'd get a single note sounding for the duration of the load because of the disabled interrupts. Then the cassette motor is turned on.

Next, a digression. The Spectrum tape system is distinctive because of the way it flashes the border colour at each pulse edge, and I wanted to use this in ZXLoader because it lets you see what's happening. But the Spectrum is designed so that the cassette hardware and the border palette register share the same I/O port.

On the Amstrad, not only are the ports different, but changing the border colour needs two write operations. The cassette routines use all the normal Z80 registers except IY (which can't be used in I/O operations anyway), and so we'd need extra PUSHes and POPs and LoaDs in the middle of a tight timing loop. This sounds like a job for . . . Alternate Register Set!

Normally the alternate set is verboten for machine code because the firmware stores its system variables there, and tinkering invariably causes a crash. However loading data from tape using software requires stringent timing loops, so the first thing we do is turn off the

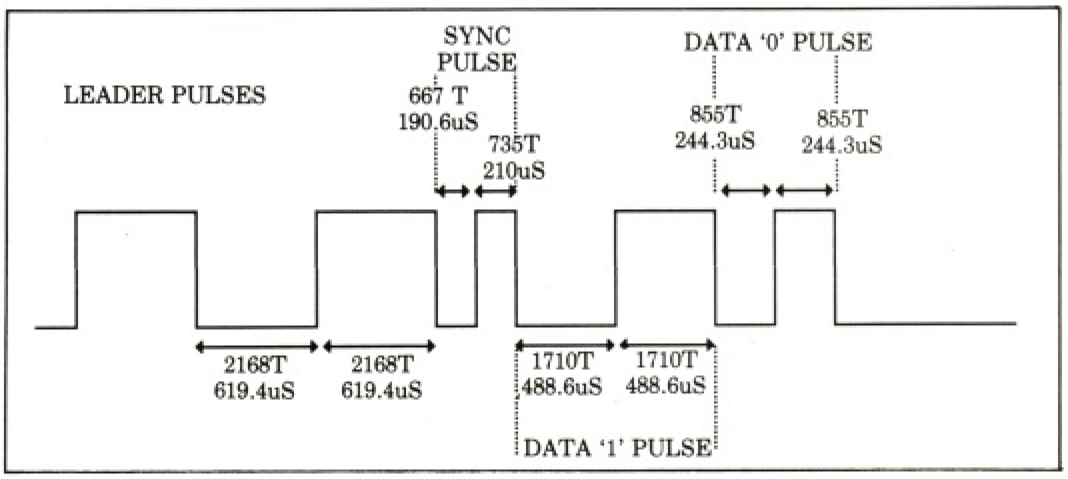
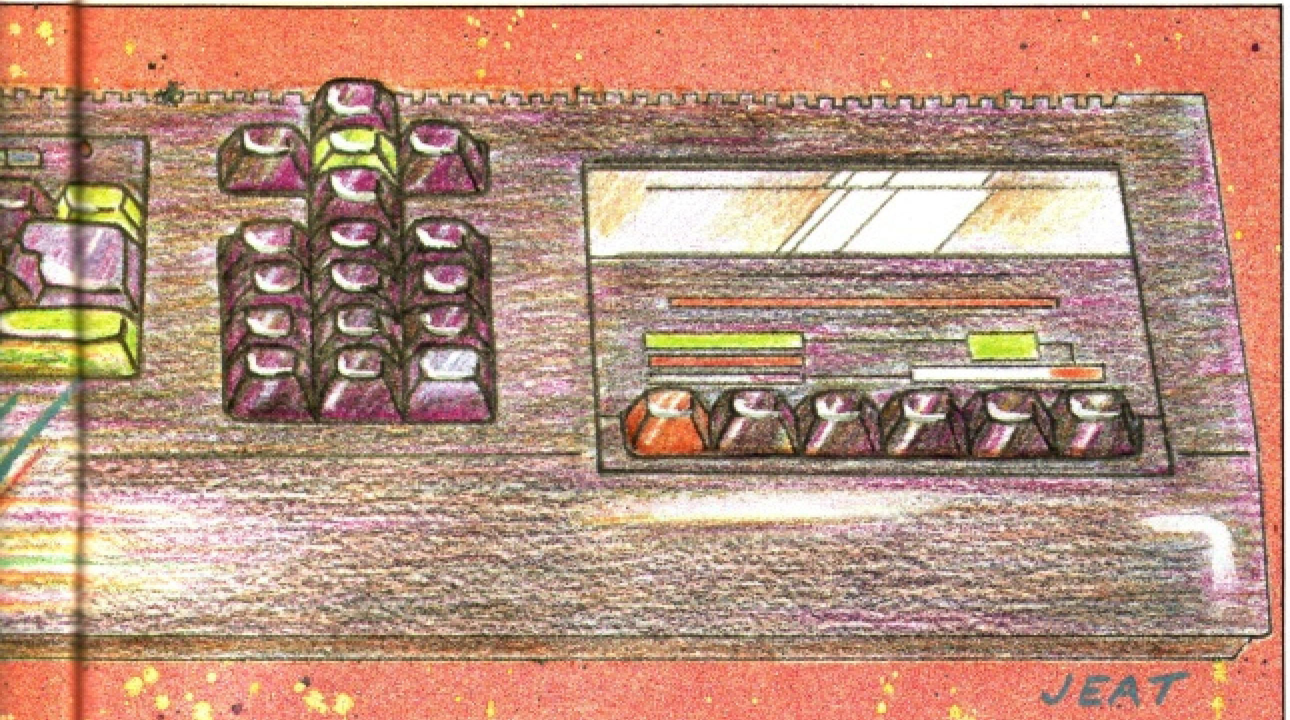


Figure 1: Four different types of tape pulse used by the Spectrum, with timings in Z80 T states and microseconds



X LOADER

interrupts.

Without interrupts the firmware is disabled, and we can use the alternate set freely, provided we restore the values before re-enabling them. This is just as well since the Spectrum routines use F' to store a flag value. As a bonus, B' already holds the video gate array port address, &7F, which we need for border control. So, in lines 2030-2090 we disable interrupts, get the alternate registers, stack the ones we'll alter, load the border palette pointer into D and swap them back again.

Next (lines 2100-2190) comes some stuff lifted straight out of the Amstrad's own ROM *(Shhh! they'll sue – Ed.)*. We'll want to know if Esc is pressed, and we can't use the standard key scan because it's interrupt-driven. The keyboard is wired through the programmable sound generator's I/O port (PSG register 14), so we latch that into the PSG chip.

Then the parallel peripheral interface (PPI) port connected to the PSG is set to input mode by sending &92 to port &F7 (fuller details of I/O port mapping can be found in the firmware guide, appendix 12).

Finally, the Esc key is on keyboard row number 8, so that key row select is sent to the hardware. Now we're ready for the actual load.

Block heads

Like the Amstrad, the Spectrum saves data with header blocks and data blocks, although all the data is in one chunk, rather than being split into 2k blocks. Another difference is that the Amstrad uses a long string of ones for the leader tone and a zero for the sync pulse which marks the beginning of the data bits. This lets the software calculate how long a 1 pulse is from the leader, allowing a variety of baud rates to be used.

The Spectrum only has a fixed write speed so the timing values are contained in the program itself rather than being derived from the tape signal. Also, the leader pulses, sync pulse and data pulses all have different widths, making it easy to pick them out. The border colour changes every pulse edge, which is why the red/cyan leader bars are broader than the yellow/blue data bars. Figure 1 shows the pulse timings in detail.

Figure 2 shows the structure of the header and data blocks, as seen by the user. To each one the save routine adds a prefix byte – a flag byte – which is zero for a header and &FF for a data block, and a final parity byte.

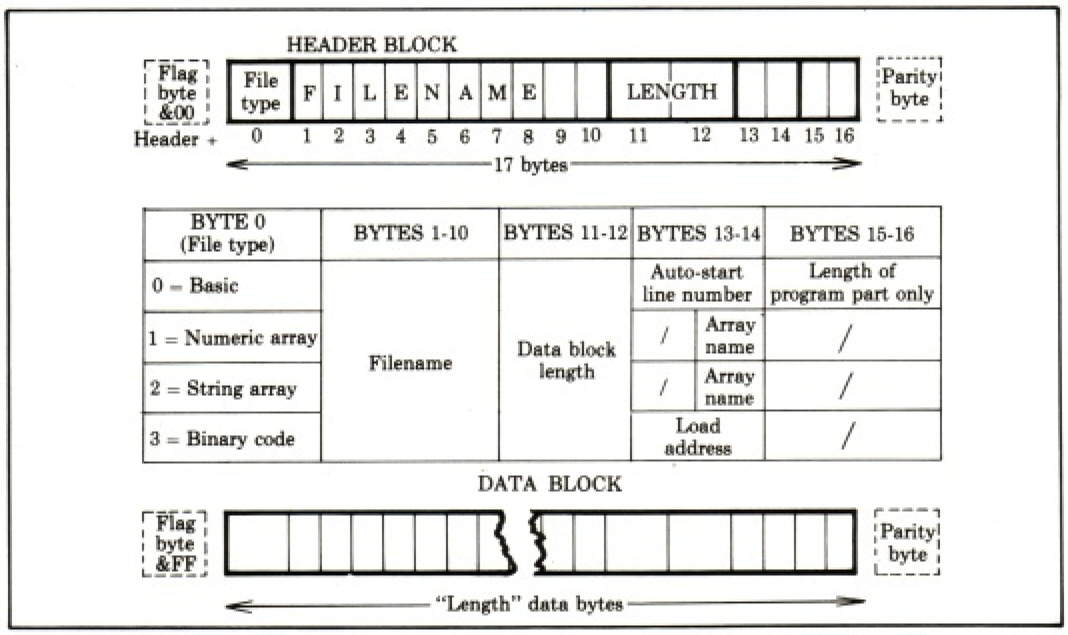
This is the XOR of all the other bytes in the block, including the flag, and is used as a checksum to indicate loading errors. The header tells the loading software the file type, filename, file length, and other information which depends on the file type. For binary files, the only type we are interested in, bytes 13 and 14, hold the address where the data should be loaded, and butes 15 and 16 are unused.

First a header must be loaded, and the ldlook routine at 2200-2270 looks for one. The routine that actually loads the blocks, ldbyts, needs three parameters.

A contains the type of block we're looking for – in this case zero for a header – IX contains the address to load the data, and DE the number of bytes to load. For a header we know this is 17. The program loops until it finds and successfully loads a header. Note that pressing Esc has no effect here – you can't break out unless a header is found.

With the header in store, the file type is checked for binary, and the search resumed if the file is the wrong type. Otherwise the flag byte is made &FF, for data, IX is pointed to &4000, which is a convenient place to put the data, and DE loaded with the file length from the header. We could load DE with 6912, the Spectrum screen size, directly, but this shows the more general method.

It's pointless getting the load address, IX, from the header because although the Spectrum screen is indeed located at &4000 (16384 decimal), commercial artist programs often save the picture not from the screen RAM but from the



BYTE 0 (File type)	BYTES 1-10	BYTES 11-12	BYTES 13-14		BYTES 15-16
0 = Basic	Filename	Data block length	Auto-start line number		Length of program part only
1 = Numeric array			/	Array name	/
2 = String array			/	Array name	/
3 = Binary code			Load address		/

Figure 2: Structure of Spectrum cassette header and data blocks

program's workspace. Thus the load address in the header could be anything.

This is also why ZXLoader simply loads the next binary file it finds on the tape – it isn't possible to tell from the header that the file is definitely a screen dump, not a machine code program.

The routine ldbyts returns with the carry flag state indicating success or failure. At 2350 this flag is swapped to safety, the other alternate registers are selected, and the previous contents restored from the stack. Swapping them back also retrieves the ldbyts carry flag (2400).

The PPI port A is switched back to output mode, the PSG control pins are returned to the inactive state, and interrupts can now be safely enabled. The motor is switched off, and a return made if the load was successful. Otherwise a suitable error message is printed before returning.

Details, more details

That's the overall picture. Now how does ldbyts work? First, it needs to tell the following routines to ignore the flag byte, which it does by resetting the alternate Z flag (line 3010). This depends on the fact that a Spectrum has 48k of RAM maximum, so the length in DE should never be of the form &FFxx. If it was, INC D would give &FF+1=0, which would set Z, not reset it. Once this 'FLAG flag' and the flag type have been saved in AF', D is restored.

Next an initial read of the cassette port is made, and the firmware guide tells us this is bit 7 on I/O port &F5. As we're looking for a leader tone, we set the colour number for a red border in E' (line 3080). This is &4C, or %01001100, because the bottom five bits are the hardware colour number 12 – not the grey scale number 6 used by higher level routines and Basic – and the top two bits specify the video gate array command type, write to palette memory.

Line 3100 stores the read bit in the C register as an initial edge type to test against, while 3110 forces the Z flag to be set, because the loop it's about to enter uses an NZ state to flag that ESC has been pressed, and we don't want to exit immediately.

Now the signal from the tape is examined by the program loop 3120-3160, until a pulse edge is detected. The routines edge_1 and edge_2 are the core routines for the whole loading system. The first looks for a single edge, the second for a pair of edges – that is, a half-pulse.

Each is entered with the previous edge type (high or low tape level) in C, and a timing constant in B. This constant represents the maximum period you expect to wait to find the next edge, which depends oan the type of pulse being sought. The change in B when the routine returns indicates how long it took to find the edge.

Success is flagged by carry set. If the carry is reset, then if the Z flag is set, B managed to reach zero before an edge was found (time-out error), otherwise the Z flag is reset indicating that Esc was pressed.

Once an edge has been found, the program enters a waiting loop of about a second (3180-3230) then checks to see if the signal is still pulsing. Here it will only accept an unbroken sequence of 256 pulses. Moreover they must be at least 3000 T states (about 850 microseconds) apart. In other words, only the wider leader pulses will be accepted, which prevents the software trying to sync on to the data pulses in the middle of a block.

Once it's satisfied it has found a leader tone, the program enters a new loop (3350-3410) to find the sync pulse. This uses a shorter time-out period (B=&C9) and it must take less than 11 passes through edge_1 for the search to succeed. Once the sync is found, the trailing edge of the sync on pulse is detected, before entering the loop to load the data bytes of the block. This phase is indicated on screen by using yellow/blue border colours, set up in lines 3440-3460 (the low five bits, %01010, being the hardware number for yellow).

Now the parity matching byte is initialised to zero, the timing constant for data pulses is loaded and the program jumps forward into the loading loop, to ldmark.

The code starting at ldmark, line 3700, is the part of the loop that fetches bits from the tape and builds each group of eight bits into a complete byte. First L is loaded with 1, binary %00000001. The single 1 bit is a marker, as we'll see.

Next edge_2 is called to find the width of the next pulse on tape, and if successful, B contains a timing value which is bigger for wider pulses. Data is saved using wide pulses for a 1 bit, narrow pulses for a 0, so the ComPare in line 3760 is effectively:

(&BF – pulse width)

As &BF is the watershed value for a one or zero bit, this subtraction will set the carry flag for a wide 1 bit and reset it for a zero bit. The recovered bit is shifted into the L register from the right, and the carry picks up the bit that drops out of the left.

For the first seven shifts this is a zero (L was 1, remember), so line 3790 loops back to pick up another bit from tape. On the eighth shift the byte is now complete in L, the marker bit moves into the carry flag, and the program drops through to 3800 where the new byte is XORed into the running parity total in H.

The length counter in DE is next tested. If it hasn't reached zero yet, the program jumps back to ldloop to store the byte.

As I explained above, the first byte in the data is simply a flag to the type of block being loaded. It should be thrown away once tested, not loaded into memory. The routine ldloop uses the alternate Z flag to choose what to do with a byte. Remember in line 3010 the alternate Z was reset. When the flag byte is loaded, the test at line 3520 makes a jump to ldflag.

Here the block type is checked against the flag byte supplied by the calling routine, and if the wrong type has been found the routine quits (3580). This is how the Spectrum cassette system skips over data blocks until it finds the right header on tape.

If the right block is being loaded we don't want to alter IX or DE, as the flag byte is not part of the data to be loaded. So ldflag compensates for the DEC DE, and skips over the INC IX, before loading the next byte. Note that a successful test for the flag byte sets the alternate Z flag, so all subsequent bytes will be loaded into RAM as expected (line 3530).

When the test for DE zero in line 3850 succeeds, the byte just fetched was the parity byte. If there were no read errors, this will have been the same as the running parity total in H, so when it was included in the parity it should have resulted in zero – a number XORed with itself is always zero. The test in 3870 generates a carry if the parity was zero, flagging success, or no carry if H was anything else.

Finally, we can look at the heart of the system, edge_1 and edge_2, which is just two CALLs to edge_1. For such an important routine it is extremely simple. The sampling loop starting at line 4090 starts by counting each pass, returning with Z flagging a time-out error if B reaches zero. Next, the keyboard row with the Esc key is scanned. If Esc is pressed, bit 2 of the byte read will be reset. The two logical operations in 4140-4150 are the trick I needed to ignore any other key in the row which might be pressed and also set up the flags in the same way as the equivalent Spectrum routine, which reads its keyboard port differently.

Next the cassette read bit is obtained and checked against its previous state (4170-4210). If it hasn't changed, a loop back for another sampling pass is made. Otherwise the software has detected a new pulse edge, so the last edge type in C is changed, ready for the next CALL to edge_1.

The alternate registers are switched in, the border colour in E' inverted (hence red turns to its complement cyan, or yellow to blue, and vice versa), and the two video gate array writes performed to update the border palette contents (4250-4310). The carry flag is set, and the routine returns.

As you can see, the only changes

required to make the Spectrum routines run on the Amstrad were the various I/O port addresses, the border flashing routine and the keyboard scan. I also found that some of the timing test values (notably in lines 3300 and 3750) had to be adjusted for reliable loading.

This is partly because the Z80 microprocessor is clocked at slightly different speeds in the two machines and partly because the alterations in the program affect the time to execute the sampling loops. I arrived at the correct values simply by trial and error adjustment until I got consistently accurate loads.

How do you make a Venetian blind?

No, not poke his eyes out – POKE the screen data sequentially. Both the Spectrum and the Amstrad use a peculiar screen mapping system where screen data which is in consecutive chunks of RAM appears on screen as rows separated by a character height.

This gives rise to the familiar Venetian blind effect of a screen dump (such as a loading screen) building up as a series of slats during a load. Worse, the interleaving system is – naturally – different on the two machines, with the Spectrum screen being further subdivided into three horizontal blocks.

The second problem in converting screen data from the Spectrum to the Amstrad is that the bits in a screen byte are interpreted differently. On the Spectrum, the eight bits each represent the state of a single pixel, on or off, like the Amstrad's Mode 2. Spectrum colour resolution is character-based and the data is stored separately.

But Mode 2 pixels are half the normal width, so Spectrum pictures would get squashed and look silly. The nearest equivalent Amstrad mode is Mode 1, but this uses two bits per pixel to represent one of four possible colours. Hmmmm...

However we're only using two colours in Mode 1 because the best we can do is transfer the on/off Spectrum pixels to black/white Amstrad pixels, and play with the colours later by hand using an art package.

Let's use Pen 0 for off, Pen 1 for on. Figure 3 gives the pixel mapping for Mode 1, where one byte represents four pixels. Since Pens 0 and 1 have their top bits zero, the bottom nibble (bits 3-0) of each Amstrad screen byte is zero, and the top nibble (bits 7-4) represent the state of the four pixels.

Figure 4 shows how easy this makes the conversion. Take a Spectrum screen byte, split it into two nibbles, store each one in the top nibble of two consecutive Amstrad screen bytes, and Clive's your uncle.

The conversion program does this for each of the 32 bytes in a Spectrum screen row, using the routine doline (lines 1240-1350 in Listing 1). The outer loop surrounding it, scrnln, simply calculates the start addresses of each Spectrum and Amstrad screen line and passes them to doline.

Figure 5 shows how a Spectrum screen address is built up from its screen coordinates, and together with the comments in Listing 1, lines 1060-1210, it should be obvious how the address is calculated.

Note that a Spectrum screen is only 256 by 192 pixels compared with the Amstrad's 320 by 200 in Mode 1, so the resulting picture will have a one character margin at the bottom and an eight character margin down the right.

Ye compleat converter

For those of you without an assembler, Listing 2 is the hex loader for the machine code given in Listing 1. This is fairly bullet-proof (even the checksums have checksums!) and will save the machine code to tape or disc.

Listing 3 is a short Basic control program which loads the ZXLoader machine code, CALLs it to load and convert a Spectrum screen, then saves the Amstrad screen to tape or disc. Obviously you can use any filename to save the screen, but tape users must remember to include the leading ! to suppress the tape messages, otherwise they will appear all over the screen you're trying to save.

Line 130 is a "Press any key to continue" line which gives tape users a chance to swap tapes and press Record or break with Esc if the load failed for any reason. You'll need the pause to change tapes, as the conversion routine is fast – the Amstrad screen will appear before the click of the cassette motor relay has died away.

Once you have an Amstrad screen dump, it is simple to load it into one of the commercial artist utilities. For example, disc users with Screen Designer should run it, select Mode 1 from the main menu and save a dummy screen "yourname". Then reset the Amstrad, erase the file "yourname.scn", transfer the screen dump to the working disc and rename it to "yourname.scn".

Now you can run Screen Designer again and load the Spectrum screen as normal. Similar tricks should be possible on any of the art packages on sale.

Once loaded the picture can be worked on, adding the two extra colours where

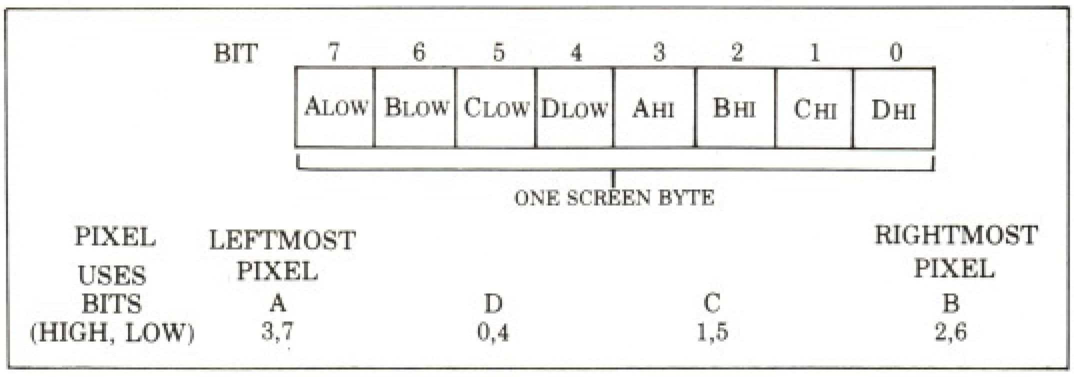


Figure 3: How four adjacent pixels A, B, C and D are mapped into an Amstrad Mode 1 screen. Two bits per pixel allows four colours.

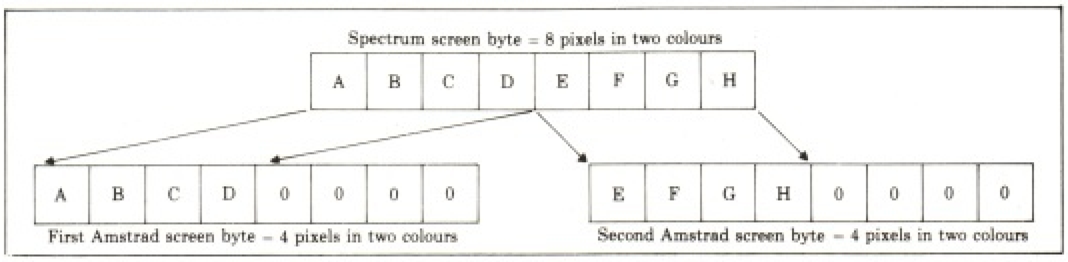


Figure 4: How eight adjacent Spectrum pixels can map onto an Amstrad Mode 1 screen. The most significant bit for each Amstrad pixel is set to zero.

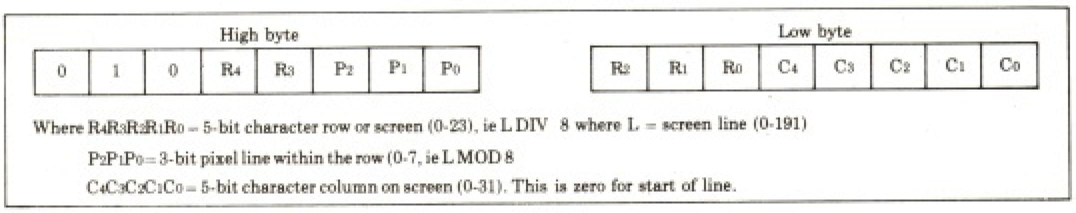


Figure 5: Converting a pixel position to a Spectrum screen address. Position (0,0) gives &4000, the start of Spectrum screen RAM.

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required, centring the smaller picture within the larger Amstrad screen boundary or extending it out to the border. One thing to note is that a screen may look very different in black and white from the way it does on the Spectrum. In particular, what seemed to be a broad diagonal line may turn out to be a series of right-angled triangles, where the foreground and background colours alternate. This is a common technique in Spectrum graphics and can only be fixed by hand.

If the editor will allow a free plug, you can see an example of a screen treated in this way in Tony Bridge's Fourmost Adventures from Global Software. I used the program given here to produce the main loading screen and the menu screen for the Amstrad conversion.

Finally, there's no technical reason why Spectrum Basic programs shouldn't be loaded into the Amstrad, decoded and saved as an Ascii file, then reloaded and edited to work on the Amstrad. However, I'm not sure the editor could offer me enough money to tackle the job.

Anyone who wants to try it will need a table of Spectrum Basic tokens, a breakdown of how tokenised Basic lines are stored internally – both in the back of the Spectrum manual – and a hefty streak of masochism.

Listing 1

```
1000 org &8000
1010 CALL zxload    ;get binary file from
      Spectrum tape
1020 RET NC
1030 LD HL,&C000    ;start address of fir
      st LINE in Amstrad screen
1040 XOR A          ;counter FOR no. of S
      pectrum screen lines TO convert
1050 .scrnln
1060 LD C,A         ;store Spectrum LINE
      counter
1070 AND 7          ;separate pixel no
1080 LD D,A         ;AND MOVE TO store re
      gister FOR SSA high byte
1090 LD A,C         ;get LINE counter aga
      in
1100 RLCA
1110 RLCA
1120 AND &E0
1130 LD E,A         ;MOVE bottom three bi
      ts of row number TO correct place i
      n E
1140 LD A,C         ;get LINE counter
1150 RRCA
1160 RRCA
1170 RRCA
1180 AND &18
1190 OR D           ;MOVE top two bits of
      row number TO correct place in D
```

```
1200 OR &40         ;include base address
      of &4000 (D is high byte)
1210 LD D,A         ;now DE is start of '
      Spectrum screen line'
1220 PUSH HL        ;AND HL is start of A
      mstrad screen line. SAVE it
1230 LD B,32        ;loop counter (32 byt
      es in a Spectrum screen row)
1240 .doline
1250 LD A,(DE)      ;get a byte from the
      Spectrum screen
1260 PUSH AF        ;SAVE it
1270 AND &F0        ;mask off top nibble
1280 LD (HL),A      ;put top nibble into
      first Amstrad screen byte
1290 INC HL         ;point TO NEXT Amstra
      d screen byte
1300 POP AF         ;retrieve Spectrum sc
      reen byte
1310 LD (HL),0      ;CLEAR second Amstrad
      byte
1320 RRD            ;AND rotate lower Spe
      ctrum nibble into top Amstrad nibbl
      e
1330 INC HL         ;point TO NEXT Amstra
      d screen address
1340 INC DE         ;point TO NEXT Spectr
      um screen address
```

```
1350 DJNZ doline    ;loop until whole LIN
      E converted
1360 POP HL         ;retrieve screen addr
      ess of Amstrad LINE start
1370 CALL &BC26     ;SCR NEXT LINE
1380 LD A,C         ;get Spectrum LINE co
      unter
1390 INC A
1400 CP 192         ;reached bottom of sc
      reen yet PRINT
1410 JR NZ,scrnln
1420 RET            ;RETURN TO BASIC TO S
      AVE screen dump TO cassette/disc
2000 .zxload
2010 CALL &BCA7     ;SOUND RESET
2020 CALL &BC6E     ;CAS START MOTOR
2030 DI             ;disable interrupts
2040 EX AF,AF'
2050 EXX            ;get alternate regist
      ers
2060 PUSH AF
```

```
2070 PUSH DE        ;SAVE ones we're alte
      ring
2080 LD D,&10       ;palette pointer
2090 EXX            ;put colour registers
      back
2100 LD BC,&F40E
2110 OUT (C),C      ;select PSG register
      14 (used TO READ the keyboard)
2120 LD BC,&F6D0
2130 OUT (C),C      ;pulse the PSG contro
      l pins high
2140 LD C,&10
2150 OUT (C),C      ;pulse the control pi
      ns low, latching the register addre
      ss
2160 LD BC,&F792
2170 OUT (C),C      ;set 8255 PPI port A
      TO INPUT
2180 LD BC,&F658
2190 OUT (C),C      ;latch keyboard row s
      elect 8 (the row with ESC ON it)
```

```
2200 .ldlook
2210 LD IX,header   ;place TO store heade
      r
2220 PUSH IX        ;SAVE header store po
      inter
2230 LD DE,17       ;17 bytes TO LOAD
2240 XOR A          ;signal 'header'
2250 CALL ldbyts    ;fetch header from ta
      pe
2260 POP IX         ;RESTORE pointer TO h
      eader
2270 JR NC,ldlook   ;loop until header fo
      und
```

```
2280 LD A,(header) ;get type from header
2290 CP 3           ;is it binary PRINT
2300 JR NZ,ldlook   ;NOT binary, so get N
      EXT header
2310 LD A,&FF       ;flag "loading data b
      lock"
2320 LD DE,(header+11) ;file length TO D
      E
2330 LD IX,&4000    ;LOAD address FOR DAT
      A
2340 CALL ldbyts    ;LOAD the DATA block
2350 EX AF,AF'      ;save carry (flags su
      ccess or failure of ldbyts)
2360 EXX
2370 POP DE
2380 POP AF
2390 EXX
2400 EX AF,AF'      ;restore alternate re
      gisters and retrieve ldbyts carry
2410 LD BC,&F782
2420 OUT (C),C      ;set 8255 PPI port A
      TO output
2430 LD BC,&F610
2440 OUT (C),C      ;pulse PSG control pi
      ns low
2450 EI             ;enable interrupts
2460 PUSH AF        ;SAVE carry
2470 CALL &BC71     ;CAS STOP MOTOR
2480 POP AF         ;RESTORE carry
2490 RET C          ;RETURN TO calling ro
      utine IF LOAD OK
2500 LD HL,errmsg   ;ELSE report ERROR
```

```
2510 LD B,21
2520 CALL PRINT
2530 RET            ;AND RETURN (carry pr
      eserved, so flags failure)
3000 .ldbyts
3010 INC D          ;reset zero flag (D c
      annot hold &FF)
3020 EX AF,AF'      ;save flags and A reg
      ister
3030 DEC D          ;RESTORE D TO origina
      l value
3040 LD A,&F5       ;INPUT port
3050 IN A,(0)       ;READ INPUT port &F5
      0
3060 AND &80        ;bit 7 is cassette RE
      AD bit
3070 EXX
3080 LD E,&4C       ;select red BORDER
3090 EXX
3100 LD C,A         ;SAVE current READ va
      lue, bit 7 ON OR off
3110 CP A           ;set the zero flag
3120 .ld_esc
3130 RET NZ         ;quit IF ESC pressed
3140 .ldstrt
```

```
3150 CALL edge_1    ;RETURN with NC IF no
      edge within about 14000 T states
3160 JR NC,ld_esc
3170 LD HL,&415     ;now WAIT a WHILE AND
      see IF signal is still pulsing
3180 .ldwait
3190 DJNZ ldwait
3200 DEC HL
3210 LD A,H
3220 OR L
3230 JR NZ,ldwait ;total loop duration i
      s about 1 second
3240 CALL edge_2  ;continue only IF two
      edges found within the allowed peri
      od
3250 JR NC,ld_esc
3260 .ldlead       ;now accept only a lea
      der signal
3270 LD B,&9C      ;timing constant
3280 CALL edge_2  ;continue only IF two
      edges are found within the
3290 JR NC,ld_esc ;allowed TIME period
3300 LD A,&C0      ;However, the edges mu
      st have been found at least
3310 CP B          ;3000 T states apart (
      ELSE could sync ON DATA signal)
3320 JR NC,ldstrt
3330 INC H         ;count the pairs of ed
      ges in the H register until
3340 JR NZ,ldlead ;256 pairs have been f
      ound
3350 .ldsync
```

```
3360 LD B,&C9      ;timing constant
3370 CALL edge_1 `;EVERY edge is conside
      red until two edges are found
3380 JR NC,ld_esc ;close together
3390 LD A,B        ;these will be the sta
      rt AND finishing edges of the 'off'
3400 CP &D4        ;sync pulse
3410 JR NC,ldsync
3420 CALL edge_1  ;the finishing edge of
      the 'on' sync pulse must exist
3430 RET NC        ;tape loading ERROR IF
      NOT
3440 EXX
3450 LD E,&4A      ;BORDER colours will n
      ow be yellow/blue
3460 EXX
3470 LD H,0        ;initialize parity che
      cksum byte
3480 LD B,&B0      ;timing constant FOR f
      lag byte
3490 JR ld_mark   ;jump forward into the
      byte loading loop
3500 .ldloop
3510 EX AF,AF'     ;get the flags
3520 JR NZ,ldflag ;jump forward only whe
      n handling the first byte
```

```
3530 LD (IX+0),L  ;make the actual LOAD
      when required (store byte in MEMORY
      )
3540 JR ldnext     ;jump forward TO LOAD
      NEXT byte
3550 .ldflag
3560 RR C          ;keep carry safe tempo
      rarily
3570 XOR L         ;RETURN now IF the typ
      e flag doesn't match first byte on
      tape
```

```
3580 RET NZ
3590 LD A,C        ;RESTORE the carry fla
      g now
3600 RLA
3610 LD C,A
3620 INC DE        ;increase counter TO c
      ompensate FOR 'decrease' after the
      jump
3630 JR ld_dec     ;jump over ldnext 'cos
      we don't store the flag byte
3640 .ldnext
3650 INC IX        ;increase the destinat
      ion pointer
3660 .ld_dec
3670 DEC DE        ;decrease the counter
3680 EX AF,AF'     ;save flags
3690 LD B,&B2      ;timing constant
3700 .ld_mark
```

```
3710 LD L,1        ;CLEAR the object regi
      ster apart from a marker bit
3720 .ld8bit
3730 CALL edge_2  ;find the length of th
      e ON AND off pulses of the NEXT bit
3740 RET NC        ;ERROR IF TIME period
      is exceeded
3750 LD A,&BF      ;compare length agains
      t approx 2400 T states, resetting t
      he
3760 CP B          ;carry flag FOR a '0'
      and setting it for a '1'
3770 RL L          ;include the NEW bit i
      n the L register
3780 LD B,&B0      ;set the timing consta
      nt FOR the NEXT bit
3790 JR NC,ld8bit ;loop WHILE there are
      still bits TO be fetched
3800 LD A,H        ;get parity checksum b
      yte
3810 XOR L         ;include NEW byte
3820 LD H,A        ;SAVE it again
3830 LD A,D
3840 OR E
3850 JR NZ,ldloop ;make a further pass I
      F the DE register does NOT contain
      zero
3860 LD A,H        ;ELSE fetch parity che
      cksum byte
3870 CP 1          ;carry set IF checksum
      is 0, ELSE reset FOR parity ERROR
3880 RET           ;RETURN TO control rou
      tine
4000 .edge_2
```

```
4010 CALL edge_1  ;in effect CALL edge_1
      twice, returning between IF ERROR
4020 RET NC
4030 .edge_1
4040 LD A,&16
4050 .delay
4060 DEC A
4070 JR NZ,delay  ;WAIT 358 T states bef
      ore entering sample loop
4080 AND A         ;CLEAR carry flag
4090 .sample
4100 INC B         ;count each pass
4110 RET Z         ;RETURN with carry res
      et AND zero set IF 'time-up'
4120 LD A,&F4      ;select INPUT port &F4
      00
4130 IN A,(0)      ;READ keyboard port
4140 AND 4         ;A=0 IF ESC pressed EL
      SE A=4
```

```
4150 XOR 4         ;A=4 IF ESC pressed EL
      SE A=0
4160 RET NZ        ;RETURN with carry res
      et AND zero reset IF ESC was presse
      d
4170 LD A,&F5      ;select INPUT port &F5
      00
4180 IN A,(0)      ;READ the port
4190 XOR C         ;now TEST the cassette
      bit against the last edge type
4200 AND &80
4210 JR Z,sample  ;jump back unless it h
      as changed
```

```
4220 LD A,C
4230 CPL
4240 LD C,A        ;change the 'last edge
      type'
4250 EXX           ;get alternate registe
      rs
4260 LD A,E        ;get BORDER colour
4270 XOR &1F       ;invert it
4280 LD E,A        ;put colour back
4290 OUT (C),D     ;select Video Gate Arr
      ay WRITE MODE (BORDER colour)
4300 OUT (C),E     ;send the NEW colour
4310 EXX           ;replace alternate reg
      isters
4320 SCF           ;flag successful searc
      h
4330 RET
5000 .header
5010 DEFS 17
5020 .errmsg
5030 DEFM 7,12,"Tape loading error",13,1
      0
5040 .PRINT
5050 LD A,(HL)     ;get character from st
      ring
5060 INC HL        ;point TO NEXT charact
      er
5070 CALL &BB5A    ;TXT OUTPUT
5080 DJNZ PRINT    ;loop until string pri
      nted
5090 RET
5100 END
```

Listing 2

```
100 MEMORY &7FFF:DIM chk(48)
110 '
120 ln=2000:RESTORE 2000:a=1
130 FOR i=1 TO 6
140 sum=0
150 FOR j=1 TO 8
160 GOSUB 400:chk(a)=d:sum=sum+d:a=a+1
170 NEXT
180 GOSUB 400:IF sum<>d THEN 500
190 ln=ln+10
200 NEXT
210 '
220 ln=1000:RESTORE 1000:a=&8000
230 FOR i=1 TO 48
240 sum=0
250 FOR j=1 TO 8
260 GOSUB 400:sum=sum+d:POKE a,d:a=a+1
270 NEXT
280 IF sum<>chk(i) THEN 500
290 ln=ln+10
300 NEXT
310 '
320 SAVE "zxloader.bin",B,&8000,&180
330 END
```

```
340 '
400 READ d$:d=VAL("&"+d$):RETURN
410 '
500 PRINT CHR$(7);"Error in line";ln
510 END
999 '
```

```
1000 DATA CD,39,80,D0,21,00,C0,AF
1010 DATA 4F,E6,07,57,79,07,07,E6
1020 DATA E0,5F,79,0F,0F,0F,E6,18
1030 DATA B2,F6,40,57,E5,06,20,1A
1040 DATA F5,E6,F0,77,23,F1,36,00
1050 DATA ED,67,23,13,10,F1,E1,CD
1060 DATA 26,BC,79,3C,FE,C0,20,D0
1070 DATA C9,CD,A7,BC,CD,6E,BC,F3
1080 DATA 08,D9,F5,D5,16,10,D9,01
1090 DATA 0E,F4,ED,49,01,D0,F6,ED
1100 DATA 49,0E,10,ED,49,01,92,F7
1110 DATA ED,49,01,58,F6,ED,49,DD
1120 DATA 21,50,81,DD,E5,11,11,00
1130 DATA AF,CD,A4,80,DD,E1,30,EF
1140 DATA 3A,50,81,FE,03,20,E8,3E
1150 DATA FF,ED,5B,5B,81,DD,21,00
1160 DATA 40,CD,A4,80,08,D9,D1,F1
1170 DATA D9,08,01,82,F7,ED,49,01
1180 DATA 10,F6,ED,49,FB,F5,CD,71
1190 DATA BC,F1,D8,21,61,81,06,15
```

```
1200 DATA CD,77,81,C9,14,08,15,3E
1210 DATA F5,DB,00,E6,80,D9,1E,4C
1220 DATA D9,4F,BF,C0,CD,27,81,30
1230 DATA FA,21,15,04,10,FE,2B,7C
1240 DATA B5,20,F9,CD,23,81,30,EB
1250 DATA 06,9C,CD,23,81,30,E4,3E
1260 DATA C0,B8,30,E0,24,20,F1,06
1270 DATA C9,CD,27,81,30,D5,78,FE
1280 DATA D4,30,F4,CD,27,81,D0,D9
1290 DATA 1E,4A,D9,26,00,06,B0,18
1300 DATA 18,08,20,05,DD,75,00,18
1310 DATA 0A,CB,19,AD,C0,79,17,4F
1320 DATA 13,18,02,DD,23,1B,08,06
1330 DATA B2,2E,01,CD,23,81,D0,3E
```

```
1340 DATA BF,B8,CB,15,06,B0,30,F3
1350 DATA 7C,AD,67,7A,B3,20,D2,7C
1360 DATA FE,01,C9,CD,27,81,D0,3E
1370 DATA 16,3D,20,FD,A7,04,C8,3E
1380 DATA F4,DB,00,E6,04,EE,04,C0
1390 DATA 3E,F5,DB,00,A9,E6,80,28
1400 DATA EC,79,2F,4F,D9,7B,EE,1F
1410 DATA 5F,ED,51,ED,59,D9,37,C9
1420 DATA 00,00,00,00,00,00,00,00
1430 DATA 00,00,00,00,00,00,00,00
1440 DATA 00,07,0C,54,61,70,65,20
1450 DATA 6C,6F,61,64,69,6E,67,20
1460 DATA 65,72,72,6F,72,0D,0A,7E
```

```
1470 DATA 23,CD,5A,BB,10,F9,C9,00
1999 '
2000 DATA 3E6,300,2E3,364,48C,439,445,5E
     3,201A
2010 DATA 3AB,4EC,327,498,2D6,57D,352,42
     1,201C
2020 DATA 4D4,392,56A,3A3,2FD,479,44C,2E
     9,201E
2030 DATA 45A,365,3C3,4B9,516,235,1AF,33
     A,1C6F
2040 DATA 156,360,430,42B,44B,321,46B,44
     5,1D2D
2050 DATA 444,4BC,000,000,1BD,2FE,2BF,3D
     7,1451
```

Listing 3

```
100 MEMORY &3FFF:MODE 1:INK 0,0:INK 1,26
    :BORDER 0:CALL &BB4E
110 LOAD "zxloader.bin",&8000
120 CALL &8000
130 WHILE INKEY$<>"":WEND:WHILE INKEY$="
    ":WEND
140 SAVE "!screen",B,&C000,&4000
150 END
```

ACU

GOING LOCO

Alex Martin expounds on writing a database

This month's column is devoted to all those people who are struggling to write their own database. Last time I talked about arrays and illustrated their use with a simple program that set up an array and let you print out its contents by specifying a subscript. This prompted a lot of people *(three -Ed)* to ask all sorts of difficult questions about databases. So I shall expand upon my explanation of arrays by using a simple address list program I have written, and explaining each section of it.

Before you go off and convert it to do Readers Digest mail shots, I should point out that the program has many shortcomings and shouldn't be seen as the last word in databases. It has been written to illustrate the basic principles of writing your own program, with the best method of storing data using Locomotive Basic on the CPC machines.

Broken down

The program is broken into seven sections. The first sets up all the numbers that we will find useful later on. After being used at the beginning of the program this section is redundant. The second is the main menu, a grandiose title for a simple loop. This is the core of the program from which the other sections are called.

The remaining sections are for loading an address list that has been previously saved, saving an address list that is currently in the computer's memory, entering the information, displaying the information, and displaying the information. OK, so you spotted that there are two sections for displaying the information. One is a routine that simply prints each of the items we are storing on the address list. The other is even simpler – it allows you to select the part of the list you wish to display and then calls the other display routine to print it out.

A few terms

Before I begin explaining each section in detail, I'll define a few database terms. My program allows you to store a names and addresses list, rather like an address book. In it you can store a name, a five line address and a telephone number. In database terms, each of these is called a field. A set of fields make up a record. A database contains a certain number of records.

Setting up

Now let's look at the first section. Ignore line 20. That locks the cassette buffers to prevent strings being corrupted when a cassette or disc operation takes place. The first real line is 50. This sets the number of records that can be stored at 30 records. The limit on how many records can actually be stored is really how much free memory is available. Thirty is a convenient number to work with.

Line 60 sets up the lengths of the fields that will be used in the program. So, for example, the phone number can contain up to 15 characters.

Line 70 dimensions the array *Record$* to the size of the number of records we are using.

Lines 80, 90 and 100 fill all the records with spaces to the size of fields.

The way in which I am storing the information is with all the data that a record will hold pushed into one string. The program doesn't try to create a new string each time a change is made to a record, it just alters the existing string. This makes things complicated because you have to keep track of whereabouts in the single string the various pieces of information are being held. To do this I have created a number of variables which I have dubbed pointers, which are set up in lines 110-130. These point to the character where the field starts.

Lines 140 and 150 set up two important variables. *Nextfreerecord* is the next record that is empty and can have data stored into it. *S$* is a string of spaces that is used later in the program.

Main menu

Section two is entitled main menu. This displays the options available to you – load, save, enter and display data.

Line 210 reads the keyboard and puts the result into the existing string *a$*. Then line 220 tests whether *a$* is in a string of characters. If it is, the program is sent off to a routine, say, the load routine at 250 if 1 is pressed. Line 230 turns *a$* back into something harmless and round we go again.

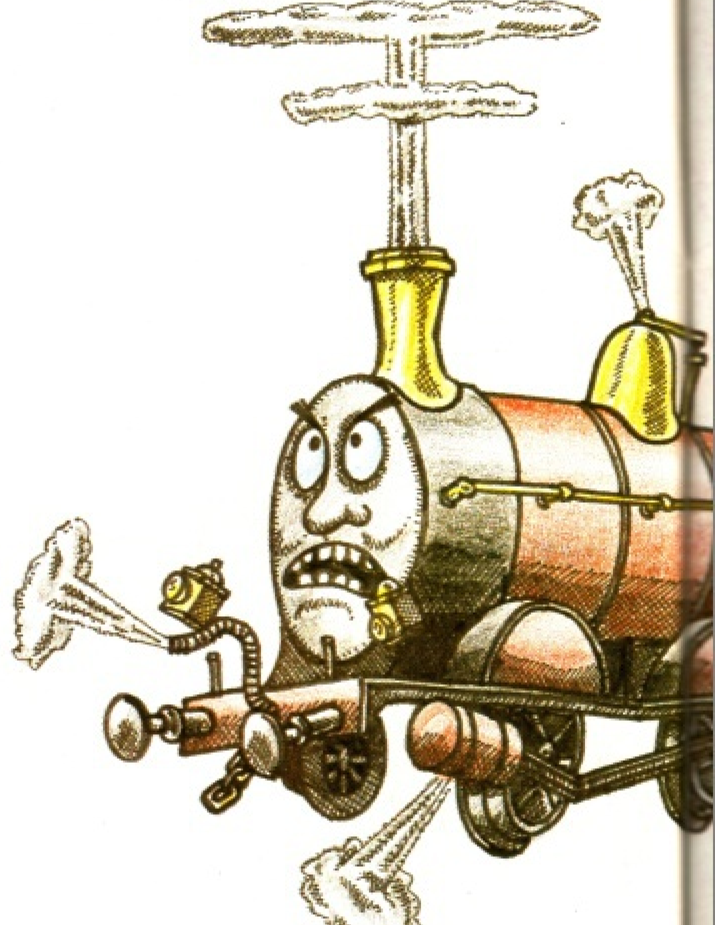
Loading a file

The loading routine asks you to enter a filename. So, providing you remember what you called the list, you do this. Line 270 then attempts to open an input file. I say attempts, because if you have forgotten the name you called the list, spelt it wrong or put the wrong disc in, the program will come back "file not found" and the program will break. However, you can always type f$="correct name":cont and have another go. This is one of the shortcomings. You can save a lot of bother by having a fixed filename and trading off flexibility.

Line 280 reads into the variable *Nextfreerecord* the last available record when the list was saved. Having gleaned that useful piece of information from the disc, lines 290 to 310 can read in the correct number of records.

Finally, 320 closes the input file and 330 does the same as 230.

It's worth mentioning that there are two ways of storing data. A program has to keep track of data when it loads it back. This program does it by making a note of how much data is being stored and storing it along with the actual data to be read back and used as a counter. Another way might be to keep reading



the data in until there is no more to read, while keeping a count of how much has been read.

Saving a file

Well, would you believe it? Saving a file is pretty much the reverse of loading one. Type in the filename. Line 370 opens an output file and 380 writes the value of *Nextfreerecord* to the file. We use the WRITE command because it saves the data in the correct format for reading back by INPUT.

Lines 390-410 write all the records to the file that have been used. Line 420 closes the output file and 430 sends the program back to the main menu.

Enter the data

The data entry part of a program is always the major piece of code and even this simple database is no exception.

Line 460 prompts you to "Type in a record number" or just "Press Enter". When using the program you should only type in a record number when you want to edit a previous entry. To put in a new entry press the Enter key. Line 470 does the test for these two options and sets up the variable *n* to be the record you want to edit. Variable *n* is used as a temporary variable throughout the program.

Line 480 tests whether there is a free record after the one you are about to edit. If you have used the last record it will print a suitable message and return to the main menu.

At line 500 you are prompted to type in information for each item. If you are editing a previously used record, pressing Enter will leave the field unchanged. Line 510 zooms off to display the existing contents of the fields. If the record has been previously unused then there is nothing to display.

Lines 530 to 560 prompt for input. 530 does the name. The variable *x$* is used to contain the data you type in. If it doesn't contain any characters the program does on to the next line without taking any action. Otherwise, it uses the function *Mid$* taking the string you have typed in, plus the string full of spaces, chopping to the right length and stuffing it into the current record. After this control is returned to the main menu.

```
10 'simple address list program
20 OPENOUT"dum":MEMORY HIMEM-1:CLOSEOUT'
   lock cassette buffers
30 '
40 'set up initial values and constants
50 entries=30
60 namelength=20:addresslength=20:number
   length=15
70 DIM record$(entries)
80 FOR n=1 TO entries
90 record$(n)=SPACE$(namelength+(address
   length*5)+numberlength)
100 NEXT n
110 namepointer=1:n=namelength
120 FOR i=0 TO 4:addresspointer(i)=n+1:n
    =n+addresslength:NEXT i
130 numberpointer=n+1
140 nextfreerecord=1
150 a$="!":s$=SPACE$(20)
160 '
170 '
180 'main menu
190 PRINT:PRINT"L Load  S Save  E Enter
    data  D Display data"
200 PRINT"Press the letter of your choic
    e"
210 MID$(a$,1)=LOWER$(INKEY$)
220 ON INSTR("lsed",a$) GOTO 250,350,450
    ,600
230 MID$(a$,1)="!":GOTO 210
240 '
250 'load a file
260 INPUT"Type in filename of file to lo
    ad ";f$
270 OPENIN f$
280 INPUT #9,nextfreerecord
290 FOR n=1 TO nextfreerecord-1
300 INPUT #9,record$(n)
310 NEXT n
320 CLOSEIN
330 MID$(a$,1)="!":GOTO 180
340 '
350 'save a file
360 INPUT"Type in filename of file to sa
    ve";f$
370 OPENOUT f$
380 WRITE#9,nextfreerecord
390 FOR n=1 TO nextfreerecord-1
400 WRITE #9,record$(n)
410 NEXT n
420 CLOSEOUT
430 MID$(a$,1)="!":GOTO 180
440 '
450 'enter data
460 INPUT"Type in record number to enter
     data into or just ENTER to use the
    next record ",n
470 IF n=0 THEN n=nextfreerecord:nextfre
    erecord=nextfreerecord+1
480 IF nextfreerecord>entries+1 THEN PRI
    NT"NO MORE FREE ENTRIES":nextfreerec
    ord=32:MID$(a$,1)="!":GOTO 180
490 PRINT
500 PRINT"Type in information after the
    prompts. If no change is required pr
    ess ENTER"
510 GOSUB 660
520 PRINT
530 INPUT"Name ", x$:IF x$<>"" THEN MID$
    (record$(n),namepointer)=MID$(x$+s$,
    1,namelength)
540 FOR i=0 TO 4:PRINT"Addr ";i;:INPUT "
    ",x$:IF x$<>"" THEN MID$(record$(n),
    addresspointer(i))=MID$(x$+s$,1,addr
    esslength)
550 NEXT
560 INPUT"Number ",x$:IF x$<>"" THEN MID
    $(record$(n),numberpointer)=MID$(x$+
    s$,1,numberlength)
570 MID$(a$,1)="!":GOTO 180
580 '
590 '
600 'display
610 INPUT"Type in number of record to di
    splay";n: IF n=0 THEN MID$(a$,1)="!"
    :GOTO 180
620 GOSUB 660
630 MID$(a$,1)="!":GOTO 180
640 '
650 '
660 'display subroutine
670 'change stream to 8 to print out on
    printer
680 stream=0
690 PRINT:PRINT#stream,"Record:";n
700 PRINT#stream,"NAME:";MID$(record$(n)
    ,namepointer,namelength)
710 FOR i=0 TO 4:PRINT#stream,"ADDR LINE
    ";i;":";MID$(record$(n),addresspoint
    er(i),addresslength):NEXT
720 PRINT#stream,"NUMBER:";MID$(record$(
    n),numberpointer,numberlength)
730 RETURN
```

On display

The last two sections are concerned with displaying the records. The section starting at line 600 is to allow any record to be displayed from the main menu. Line 610 prompts for a record to display, Line 620 simply goes off to the display routine at line 660 and then 630 returns to the main menu.

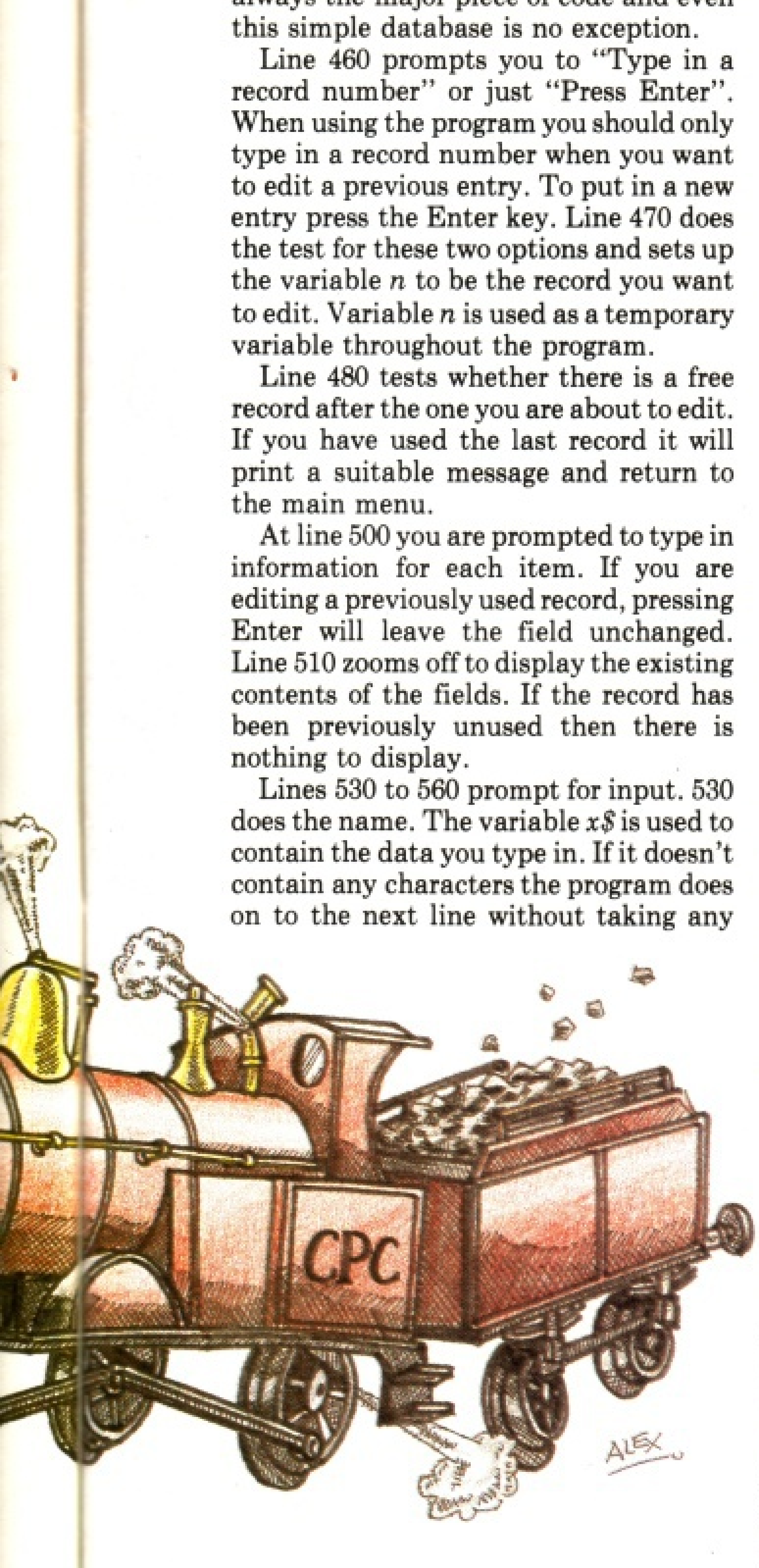
The display subroutine prints the record number, name, address (lines 0 to 4) and the number. I have included a variable called *stream* in this routine that directs the output to the screen. If you change he variable *stream* to 8, the output will be directed to the printer port.

Adapting the program

I have written the program so that it can be easily adapted. By changing the values in lines 50 and 60 you alter the number of records that can be used and the lengths of the fields. Changing the names of the fields is relatively simple but means going through the program editing each reference to a field. To change the number of fields you will have to work quite hard and broadly understand what each line of the program does. But to get you started remember that each field must have a length (the number of characters it contains), and a pointer (the character in the record string where the field starts).

Your problems will start when you try to define fields that take up more than 255 characters in total. This would exceed the maximum length of a string. To get round this another record array must be created and used to contain the additional fields. If you master the general idea of this program, which is that data is stored by altering existing strings rather than creating new ones, you will find that using more advanced facilities, like the Bank Manager extensions on the 6128 and Jetsam with Mallard Basic, will come easily to you.

ACU



SOFTWARE FOR THE AMSTRAD

ULTRABASE

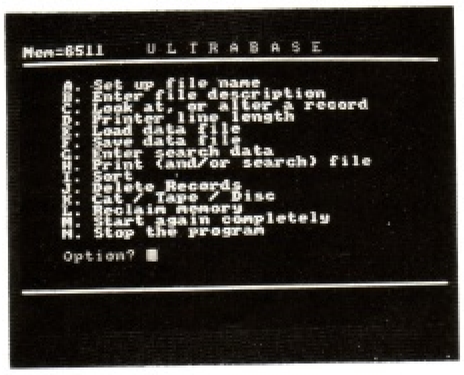
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- More than 25K of memory for data storage
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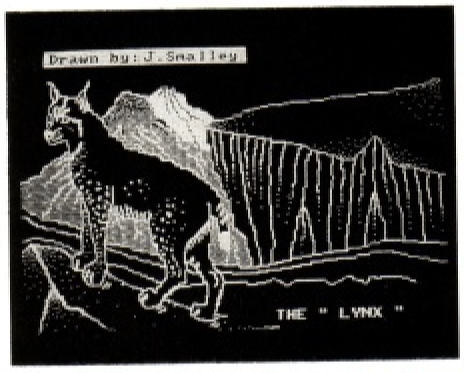
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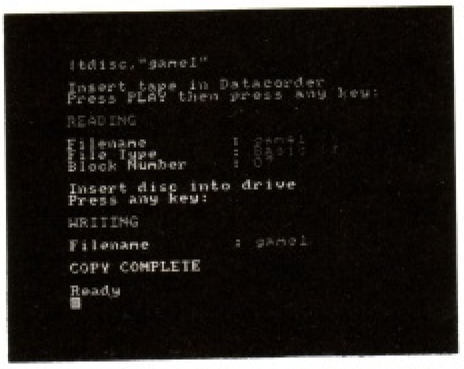
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BACKUP Complete disc backup

ACCESS Lock/unlock your files

WIPE Selectively delete files

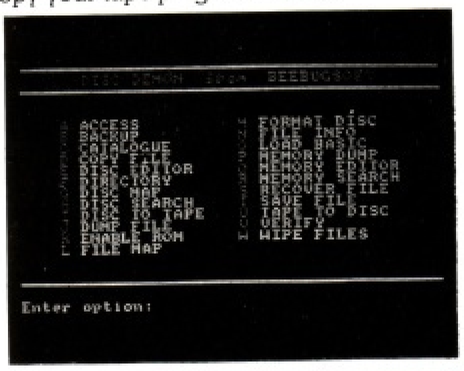
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SEEK AND YE SHALL FIND...

Into adventures with Bill Brock

Adventure games come in all sorts of different formats, with many variations of scenario and almost numberless ways in which they have to be solved. Most aim to give the player that vital freedom of movement that is so important to the role playing gamer. Coupled with this freedom to make your own decisions on what to do next are a series of underlying puzzles that have to be solved to achieve a final solution.

It is debatable which of these two factors is the more important to the avid adventure player. Is it the total freedom of movement in an alternative world, or the mental stimulation of trying to find the answers to a series of apparently insoluble puzzles? Although these are the two main attributes there is also a third that, when it appears, is often hailed with a certain gruesome pleasure by the more heroic among us – fighting, battles and general mayhem!

Orcs galore

All three can be found in Runestone, a Firebird update of a previous release by Games Workshop. The original came out in 1985 for the Spectrum and had quite good reviews but was a little slow. This latest version has been considerably speeded up and has also been converted for the Amstrad.

The action takes place in the land of Belorn with the graphic showing what your character can see from his present position. Let him look in a different direction and the scene changes to suit. Move forwards to walk through this landscape and the perspective of the various notable features alter accordingly.

This landscaping is in a similar style to that used in the Lords of Midnight but is sufficiently different in detail to create quite a different atmosphere. The effect is an impressive piece of programming, especially when you consider that Runestone also supports a text input routine that offers some pretty comprehensive facilities.

The aim of the game is to find the lost Runestone of Zaphir and bring about the destruction of the evil Kordomir the Dark. The history of Belorn is one of peace and a growing ability in the field of magic, with a series of great wizards making startling discoveries. This was long in the past and the people's natural antipathy to war left them at the mercy of bands of marauding orcs from the northern wilds.

Many years passed and the knowledge of the great wizards has long been forgotten. The orcs plunder at will and the evil genius of Kordomir plans only the darkest of futures for the good folk of the south. There are only a few who would now oppose the growing evil. Of these, three people – Greymarel the wizard, Morval the warrior and Eliador the elf – are bound together by an ancient prophesy, as potential saviours of belorn.

Three in one

Playing Runestone you may assume the persona of each of these three characters. An excellent picture of your present host is shown alongside the view of the landscape. The game is played in real time and if there is no input for a while the face staring out at you yawns with boredom! Type in a silly command and he will either poke out his tongue or frown in a most convincing manner.

The instructions are good and are accompanied by an impressive map and reproduction of fragments from the lost book of Zarmir, a powerful wizard of long ago who foretold the events to come. The map does not show everything you will meet but gives you a general idea of the main features of Belorn. It also helps you locate your three characters at the beginning of the game.

There are a number of independent characters roaming around and it is important for you to quickly determine your location and organise your characters and what they should be carrying. Every move you take means that others are also moving – many with evil intent for the future of you and your friends.

The instructions recommend changing from the control of each main character at fairly rapid intervals – heed this warning. Search the lonely wooden dwellings in the beech woods with Eliador the elf for too long and when you return to Greymarel you will likely find he has been captured by the orcs.

Beware the thief

Most of the good folk in the south will aid you if they can and some are independent characters who may well accompany you on your quest. There is one objectionable little creature – Skrimnal the Sly – who, although a doughty fighter, also has sticky fingers. Every time he grins you had better check your inventory to see what is missing. He will quite happily give it back, only to take it again at the earliest opportunity.

There are several ways in which to play Runestone. There is the main quest which will involve the finding of many artifacts and trying to determine their uses. Then there are several possibilities open for a free ranging heroic crusade against the orcs coupled with a general exploration of Belorn.

Most of the useful items have long since been stolen by the orc hordes and are now in their fortified towers. Liberating these is no mean task and the incessant problem of avoiding capture in the early stages coupled with solving the problem of Skrimnal are your first main objectives.

Although Greymarel is a wizard, he does not have the powers of his forebears and has to learn from you how to

recover the lost wisdoms. He has a true wizard's staff of power but what does he have to do to utilise its powers? Likewise Morval and Eliador are ideal for certain specific operations, but you must find their optimum actions in each situation.

Easy access

Runestone is very easy to play but any form of success is by no means simple and will have to be fought for with cunning and tenacity. The method of inputting commands has been well thought out with several single key entries accepted for the more commonly used actions. Unlike most adventure games, N,E,S,W will not move you in these directions but enables you to look in that direction.

To move in the direction you are facing type in M (or MOVE). To speed up the command sequence you may type in M,M,M,M . . . to move a number of locations without stopping. Entering and leaving buildings is just as quick – use I (or IN) and O (or OUT). The command analyser is very accommodating and will understand both PICK UP THE RING and GET RING.

You may also talk to other characters and ask them to do certain things. ASK ELIADOR FOR THE FIGURINE and TELL SKRIMNAL TO ATTACK DORKITH WITH THE AXE are both quite readily understood. The fighting routines are built in, with no real control available to the player other than the choice of weapons. Care must be taken to specify which weapon is to be used or characters will only use their hands. As they all seem to tire fairly quickly, capture and imprisonment rapidly becomes inevitable.

There are many things to find and having found them you must then determine their uses. Runestone is a complex and packed program and for this reason does not permit you to quit and start again without reloading the program. Saving the current game becomes very important. You can then try different approaches – knowing that you can return to a secure base should your actions not be the right ones.

You may request your present score, which will give you an idea of how well you are doing. This score goes up and down throughout the game so it is not that easy to interpret. I did very well at the beginning but after I had retrieved what I thought to be some very useful items it had dropped to 0%. Perhaps the baddies had been more active elsewhere – never forget that as each moment passes by, someone else is doing something somewhere.

Classic mould

Castle Blackstar is a text only adventure from CDS Micro Systems that has all the ingredients one has come to expect in a classic adventure. The program has been around for some time, although the Amstrad version is the latest to be completed. It is also interesting for its price – I got mine for £1.50 but many offer it for £2.99. Either way it is good value for money.

The story line is brief and to the point as you are transported by a goddess from a troubled sleep to the world of Castle Blackstar. You must find and return a mystic orb stolen from her altar. Any treasures you find along the way you may keep – after the goddess has cleansed them of evil.

There are three basic areas to explore – the forest around the castle, the castle itself and the dungeons deep below both the forest and the castle.

The forest is a fairly simple maze and can be mapped by dropping things in the standard manner but of course when you arrive you have no possessions – so this part is best left to a little later.

Mapping is important and is reasonably straightforward just as long as you remember that there are several levels or floors to both the castle and the dungeon. The castle is cluttered with all sorts of interesting things. Some are real treasures some are just interesting red-herrings.

The input parser will accept reasonable sentences and understands multiple commands such as GET THE LAMP AND LIGHT IT. The location descriptions are long and interesting with the option of displaying the full text only on entering a new location. Due to the extended nature of the text it is not surprising that some words mentioned in the descriptions are not understood. This should cause no real problem and will only emphasise the importance (perhaps!) of those that are.

Beginners should have no trouble making themselves understood, as Castle Blackstar prefers the simple direct approach. Any deviousness is kept for the puzzles and not reflected by its use of vocabulary.

Like all good games it has save and load game status commands and should you get bogged down then QUIT will return you to the beginning of the adventure. Save and load are very rapid – taking only about 20 seconds. The number of turns you have taken together with your current score is displayed at the top of the screen – if you wanted to, you could even work out how long the oil in your lamp will last!

There is plenty to get your teeth into and the puzzles vary sufficiently in difficulty to keep most adventurers glued to their screens. The text is well written and adds that atmosphere that keeps you wanting to discover something new. At less than £3 – buy it!

Tops?

We have not had exactly a million replies to the request for your selection of the top adventure games for the Amstrad! The limited number that have so far written in to tell us their ideas of top games are statistically too few to give a final placing.

But to give you some idea of those in the running, here are some that stand out as being probable contenders. They are not in any form of order and are by no means the only games mentioned.

Write in with your Top Ten and perhaps we can give you a players' Top Ten as opposed to those that sell the most – it would be interesting to see if there is any substantial difference.

In the running so far are:

The Lord of the Rings	Melbourne House
Red Moon	Level Nine
Hitchhikers Guide to the Galaxy	Infocom
Jewels of Babylon	Interceptor Micros
Mindshadow	Activision
Lords of Midnight	Beyond
Return to Eden	Level Nine
Terrormolinos	Melbourne House
The Hobbit	Melbourne House
Robin of Sherwood	Adventure International

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An Oasis by the seaside

Chris Wood was known as CWood at school. Now he is a programmer and journalist. We sent him in search of top quality software.

After four hours driving up the M thingummy I could be found recuperating on the seafront at Weston super Mare, thinking that it couldn't be too bad having to work only two hundred yards from the sea. I was just about to pop in and visit the team at Oasis who do indeed work the aforementioned distance away to see what they are up to, why they are doing it and what they are going to do when they have finished that.

They are famous for their Forth-based products for the Spectrum and Commodore – at least one commercial program was written on the Spectrum with White Lightning – and now that they have turned their attention to the Amstrad with the Laser range they appear to be going from strength to strength.

A little gold plaque with Oasis on it next to a building society led me up to their second and third floor offices where I met John Gross, who is half partner with Steve Britton and whose official title is Technical Director. Paul Newnham wandered in and proceeded to load something up on a 464.

"This is just something that Paul has been writing with Laser Basic and the Compiler", explained John "Paul is our resident expert on most of the Oasis products – as he writes all the demos he probably knows them better than the authors, so he handles all our technical enquiries from customers".



Technical director John Gross with the programmers Chris Smith, Paul Newham, Andrew Frood, and in the front Kevin Hambleton

Meanwhile the game had loaded. "Captain Frosty" it proclaimed in large flashy letters. It was essentially a platform game, with a caped Captain Frosty stomping around, climbing ladders, leaping gaps, avoiding monsters and collecting keys, which were taken from him and deposited at random around the – as yet – only five rooms. There were the normal bouncing type sprites and a few intelligent ones which homed in on you.

Paul: "It just started as something to do in spare moments, but now it's getting so good we're not sure if we might not be able to sell it".

It certainly looked very playable as Captain Frosty negotiated the screens and used his cape as wings to flap down holes in the platforms. "Very impressive", I said. "So that's the sort of thing you can do if you compiler Laser Basic programs?"

"Not quite", said John. "Show him, Paul". Paul duly loaded up the compiled version, and sprites whizzed around the screen at alarming speeds. Captain Frosty had soon lost all his lives. "Impressed?" "Yup!"

Steve Britton appeared as if like a compiled sprite, and like the friendly, sensible guy he is suggested we go down the pub and have lunch. There's something nice about a west country pub by the sea with lunch and a cool pint of cider.

Down at The Old Bull

***CWood:** When did Oasis start?*

John: We started in about 1980, about the same time as Bug-Byte and all the rest of them. We were very small then. It was originally the idea of a guy called Pete McQuade – who is now with IBM – and a chap called Wilf Garner. I'd just bought a micro, and we thought we could make some money out of it, so we had this bright idea of becoming a company.

Steve: Oasis were still very small when I joined about two years ago. It was part time and they were working

from a garage. Then about three months later we moved to offices. John went full time, as did Wilf, who has now moved on, and I was the last to become totally full time. You want the programmers to be full time first, as they're the people who have to spend all their time in the office, and to start with I could do my work just as well in the evenings.

***CWood:** What do you do?*

John: Steve basically runs everything. He's the manager and keeps track of the business and financial side, and works out the contracts and that sort of thing.

Steve: When we started properly, for about two years we worked seven days a week, and every night, but now we're up and about it's a bit easier. It was a lot of work.

***CWood:** What was the turning point for you?*

Steve: Well, when I started we were writing programs for the Dragon, Pascal, a Basic compiler and Chess. Chess was very popular – it was in the charts for months and months, I think mainly because Dragon Data's version was on cartridge. But White Lightning was the one that made people talk about Oasis, there's no doubt about that.

***CWood:** Do you have any plans to expand?*

Steve: Oh yes, obviously, we want more programmers all the time now. We would quite like to move into the business market perhaps, as games are not quite our forte. The games are getting so good now that I think if we were going to move into that market, we should have done it a long time ago, then we could have moved with everybody else. Some of the games that are coming out now are just fantastic. People like Denton Designs are better at that sort of thing. We don't know that market – we know about utilities and we think it's better to stick with that. Better the devil you know.

***CWood:** Will you go 16 bit, with the ST, Amiga and the rumoured new Amstrad?*

Steve: Oh yes, you've got to look that way, and we might even look at the 8256 and 8512.

Back at the office

Steve: We both grew up around here, and it's a very pleasant place – not too commercial yet. It does have its advantages being so near the sea, as we have students down from the universities in the summer. We don't think they would want to work in the summer if we were in the middle of a city.

Back in the offices, tea was forthcoming – apparently everyone drinks about a gallon a day, according to Chris Smith, one of the resident programmers, who was upstairs in the programmers' quarters. As you would expect, various bits of hardware were spread around the room, and Andrew Ford appeared to be doing something in 3D on a BBC Micro. Chris showed me the program he had been working on, which is Laser Genius, their assembler dissasembler.

Steve: That has taken Chris, Kevin Hambelton and John about two and a half man-years to write, which is quite frightening when you think about it. It's a lot of investment to put into a program.

***CWood:** Is that a problem with utilities, that you do have to spend such a long time on them?*

John: Well, it is a long time to spend on a program, and it does mean that after such a long time, if you've got it wrong it could be disastrous. But fortunately we've never done anything yet that has really bombed. I think everybody these days is taking longer to develop programs, not just utilities. As Steve said, you've only got to look at the games. The reason we can spend a long time is simply that the turnover of machines is not what it was. A few years ago if you wrote something for, say, the Dragon, you didn't know how long the machine was going to last, and you couldn't afford the development time. Now that the machines are much more stable you can afford the time because you will sell more programs over a longer period, especially with utilities. Saying that though, this is the most time we've every spent on anything.



The Oasis crew

***CWood:** Is it easier now that Ocean are marketing your products for you?*

Steve: Oh yes, part of th reason we are doing so well is definitely due to Ocean.

John: Yes, marketing is definitly Ocean's strong point and we are very happy with them.

***CWood:** Are you doing well overseas?*

John: The foreign market is pretty good – in particular Germany – and apparently Laser Basic is number 11 in the French charts. It went up to about number 30 in Sweden.

***CWood:** Is piracy a problem?*

John: Well it certainly is in America I think, but I am not sure about other places.

***CWood:** Do you still see mail order as a way of selling?*

John: No. If someone sends us a coupon from an 18 month-old mag, then we will supply it, but we are very pleased with the way Ocean are handling things at the moment. When an industry starts up, then everyone can make a living, but as soon as the professionals move in like Firebird and Ocean, it's a whole new ballgame. We're doing all right though.

Well they certainly appear to be doing fine, and so with a parting cup of tea, I left Oasis in the oasis of Weston super Mare. I wonder if that's why they called it that? I forgot to ask. ACU

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Battle of the cars

Fed up with typing in mega-listings? Bored with entering hex dumps? Want to learn a little about Basic? Here's a short Basic program that really shows the potential of Locomotive Basic for writing games. This will work on any of the CPC computers but not the PCWs.

The idea of the game is to control a racing car travelling round a grid. A robot car is travelling round in the opposite direction and will attempt to crash into you as you drive round. So to avoid it you'll have to switch lanes. In the meantime you must drive over the dots to accumulate a score. Driving over all the dots on one screen entitles you to go to the next screen and do it all again.

The author, Mark Edmonds, reminds us that some typing can be saved by using the copy cursor (Shift and the cursor keys). For example, line 470 is the same as 650.

```
10 REM       Bang Wollop
20 REM      *************
30 REM
40 REM    Mark Edmonds 1986
50 REM
60 MEMORY HIMEM-12
70 COPYCHAR=HIMEM+1
80 FOR ADDRESS=COPYCHAR TO COPYCHAR+10
90 READ BYTE:POKE ADDRESS,BYTE
100 NEXT ADDRESS
110 DATA &CD,&60,&BB,&DD,&6E,&00,&DD,&66
    ,&01,&77,&C9
120 RESTORE 130:FOR Q=1 TO 10:READ IK:P(
    Q)=IK:NEXT
130 DATA 0,13,1,3,2,10,9,4,11,6
140 GOSUB 1290
150 REM
160 REM * Instructions *
170 REM
180 BORDER 0:INK 0,0:INK 1,25:INK 2,17:I
    NK 3,19
190 MODE 1:PAPER 0:CLS:PEN 1:LOCATE 11,1
    :PRINT"* BANG WOLLOP *"
200 PEN 2:FOR D=1 TO 39:LOCATE D,5:PRINT
    " ";CHR$(250):FOR N=1 TO 70:NEXT N:N
    EXT D:LOCATE 40,5:PRINT" "
210 PEN 3:LOCATE 1,6:PRINT" A game of sk
    ill and anticipation..."
220 PEN 1:PRINT:PRINT"  The object of th
    e game is to race    around the man
    y passages of the track    collectin
    g points as you go whilst      avoi
    ding the suicidal robot car."
230 PRINT:PRINT"  There is one catch...y
    ou can only     change lanes at one
    of the four small           gaps in t
    he circuit!"
240 PRINT:PRINT" The robot car can only
    move one lane   at a time....  you c
    an move up to five   in one gap.BEWA
    RE...the robot drives    in the oppo
    site direction and always   changes
    into the lane nearest to you !!"
250 PEN 2:LOCATE 12,24:PRINT"PRESS ANY K
    EY"
260 IF INKEY$="" THEN 260
270 CLS:PEN 1:LOCATE 16,1:PRINT"KEYS":LO
    CATE 16,2:PRINT"===="
280 PEN 3:LOCATE 9,4:PRINT"A - Move up o
    ne lane"
290 LOCATE 9,6:PRINT"Z - Move down one l
    ane"
300 LOCATE 9,8:PRINT"N - Move left one l
    ane"
310 LOCATE 9,10:PRINT"M - Move right one
     lane"
320 PEN 2:LOCATE 12,24:PRINT"PRESS ANY K
    EY"
330 IF INKEY$="" THEN 330
340 REM
350 REM * Set Up *
360 REM
370 SC=0:DOTS=0:SH=1:LI=3
```



```
380 REM
390 REM  * Draw Screen *
400 REM
410 MODE 1:INK 0,P(SH)
420 PAPER 0:CLS:BORDER 7:PEN 1
430 PRINT"+-----------------------------------
    ---------+";
440 PRINT"|.................          .......
    .........|";
450 PRINT"|.+---------------          -------
    -------+.|";
460 PRINT"|.|...............          .......
    .......|.|";
470 PRINT"|.|.+-------------          -------
    -----+.|.|";
480 PRINT"|.|.|.............          .......
    .....|.|.|";
490 PRINT"|.|.|.+-----------          -------
    ---+.|.|.|";
500 PRINT"|.|.|.|...........          .......
    ...|.|.|.|";
510 PRINT"|.|.|.|.+---------          -------
    -+.|.|.|.|";
520 PRINT"|.|.|.|.|
     |.|.|.|.|";
530 PRINT"|               +-------------------+
     |";
540 PRINT"|               |                   |
     |";
550 PRINT"|               |                   |
     |";
560 PRINT"|               |                   |
     |";
570 PRINT"|               +-------------------+
     |";
580 PRINT"|.|.|.|.|
     |.|.|.|.|";
590 PRINT"|.|.|.|.+---------          -------
    -+.|.|.|.|";
600 PRINT"|.|.|.|...........          .......
    ...|.|.|.|";
610 PRINT"|.|.|.+-----------          -------
    ---+.|.|.|";
620 PRINT"|.|.|.............          .......
    .....|.|.|";
630 PRINT"|.|.+-------------          -------
    -----+.|.|";
640 PRINT"|.|...............          .......
    .......|.|";
650 PRINT"|.+---------------          -------
    -------+.|";
660 PRINT"|.................          .......
    .........|";
670 PRINT"+-----------------------------------
    ---------+";
680 LOCATE 17,12:PEN 2:PRINT"Score ";SC
690 LOCATE 17,13:PEN 3:PRINT"Sheet ";SH
700 LOCATE 17,14:PEN 1:PRINT"Lives ";LI
710 REM
720 REM * Tune *
730 REM
740 PEN 2:LOCATE 21,24:PRINT CHR$(248)
750 PEN 3:LOCATE 21,10:PRINT CHR$(244)
760 FOR M=1 TO 3
770 SOUND 7,239,10
780 FOR N=1 TO 700:NEXT N
790 NEXT M
800 SOUND 7,119,100
810 LOCATE 21,10:PRINT " "
820 REM
830 REM * Main Loop *
840 REM
850 X=21:Y=24:A=21:B=10
860 L=5:K=1
870 Z=248:C=244:A%=0:B%=0
880 LOCATE X,Y:CALL COPYCHAR,@B%
890 LOCATE A,B:CALL COPYCHAR,@A%
900 PEN 2:LOCATE X,Y:PRINT CHR$(Z)
910 PEN 3:LOCATE A,B:PRINT CHR$(C)
920 D=A:E=B:V=X:W=Y
930 IF B%=46 THEN DOTS=DOTS+1:SOUND 7,11
    9,3
940 IF (X=A OR X=A+1 OR X=A-1) AND (Y=B
    OR Y=B+1 OR Y=B-1) THEN GOTO 1180
950 IF Z=248 OR Z=250 THEN X=X-(249-Z) E
    LSE Y=Y-(250-Z)
960 IF C=244 OR C=246 THEN A=A-(245-C) E
    LSE B=B+(246-C)
970 I$=UPPER$(INKEY$)
980 IF I$="N" THEN GOTO 1390
990 IF I$="M" THEN GOTO 1420
1000 IF I$="A" THEN GOTO 1450
1010 IF I$="Z" THEN GOTO 1480
1020 IF B=14 AND A>30 AND A<38 AND K<L T
    HEN K=K+1:A=A+2
1030 IF B=14 AND A>32 AND A<40 AND K>L T
    HEN K=K-1:A=A-2
1040 IF A=19 AND B>15 AND B<23 AND K<L T
    HEN K=K+1:B=B+2
1050 IF A=19 AND B>17 AND B<25 AND K>L T
    HEN K=K-1:B=B-2
1060 IF B=12 AND A>3 AND A<11 AND K<L TH
    EN K=K+1:A=A-2
1070 IF B=12 AND A>1 AND A<9 AND K>L THE
    N K=K-1:A=A+2
1080 IF A=22 AND B>3 AND B<11 AND K<L TH
    EN K=K+1:B=B-2
1090 IF A=22 AND B>1 AND B<9 AND K>L THE
    N K=K-1:B=B+2
1100 IF (X=Y AND X<11) OR (X+(25-Y)=40 A
    ND X>29) OR (X+Y=41 AND X>29) OR (X
    +Y=26 AND X<11) THEN Z=Z+1
1110 IF (A=B AND A<11) OR (A+(25-B)=40 A
    ND A>29) OR (A+B=41 AND A>29) OR (A
    +B=26 AND A<11) THEN C=C+1
1120 IF C=248 THEN C=244
1130 IF Z=252 THEN Z=248
1140 IF DOTS=288 THEN GOTO 1510
1150 PEN 1:LOCATE D,E:PRINT CHR$(A%):LOC
    ATE V,W:PRINT" "
1160 GOTO 880
1170 REM
1180 REM  * Crash *
1190 REM
1200 PEN 3:LOCATE X-1,Y-1:PRINT"***":LOC
    ATE X-1,Y:PRINT"*#*":LOCATE X-1,Y+1
    :PRINT"***"
1210 ENV 1,100,3,1:SOUND 1,200,100,1,1,1
    ,5
1220 PS=SC:SC=SC+DOTS
1230 PEN 2:FOR T=PS TO SC:LOCATE 23,12:P
    RINT T:SOUND 7,119,1:NEXT T
1240 LI=LI-1:LOCATE 17,14:PEN 1:PRINT"Li
    ves ";LI
1250 FOR WT=1 TO 1000:NEXT WT
1260 IF LI=0 THEN GOTO 1560
1270 DOTS=0
1280 GOTO 380
1290 SYMBOL 244,&7,&F7,&62,&FF,&FF,&62,&
    F7,&7
1300 SYMBOL 244,&7,&F7,&62,&FF,&FF,&62,&
    F7,&7
1310 SYMBOL 245,&DB,&FF,&DB,&18,&5A,&7E,
    &7E,&5A
1320 SYMBOL 246,&E0,&EF,&46,&FF,&FF,&46,
    &EF,&E0
1330 SYMBOL 247,&5A,&7E,&7E,&5A,&18,&DB,
    &FF,&DB
1340 SYMBOL 248,&7,&F7,&62,&FF,&FF,&62,&
    F7,&7
1350 SYMBOL 249,&5A,&7E,&7E,&5A,&18,&DB,
    &FF,&DB
1360 SYMBOL 250,&E0,&EF,&46,&FF,&FF,&46,
    &EF,&E0
1370 SYMBOL 251,&DB,&FF,&DB,&18,&5A,&7E,
    &7E,&5A
1380 RETURN
1390 IF X>3 AND X<11 AND Y>10 AND Y<16 T
    HEN X=X-2:L=L+1
1400 IF X>32 AND Y>10 AND Y<16 THEN X=X-
    2:L=L-1
1410 GOTO 1020
1420 IF X>1 AND X<10 AND Y>10 AND Y<16 T
    HEN X=X+2:L=L-1
1430 IF X>30 AND X<38 AND Y>10 AND Y<16
    THEN X=X+2:L=L+1
1440 GOTO 1020
1450 IF Y>3 AND Y<11 AND X>17 AND X<24 T
    HEN Y=Y-2:L=L+1
1460 IF Y>17 AND X>17 AND X<24 THEN Y=Y-
    2:L=L-1
1470 GOTO 1020
1480 IF Y>1 AND Y<9 AND X>17 AND X<24 TH
    EN Y=Y+2:L=L-1
1490 IF Y>15 AND Y<23 AND X>17 AND X<24
    THEN Y=Y+2:L=L+1
1500 GOTO 1020
1510 PS=SC:SC=SC+DOTS
1520 PEN 2:FOR T=PS TO SC:LOCATE 23,12:P
    RINT T:SOUND 7,119,1:NEXT T
1530 SH=SH+1:DOTS=0
1540 IF SH=11 THEN SH=1
1550 GOTO 380
1560 CLS:PEN 2:LOCATE 16,13:PRINT"GAME O
    VER"
1570 LOCATE 16,15:PEN 3:PRINT"SCORE -";S
    C
1580 LOCATE 9,24:PEN 1:PRINT"PRESS A KEY
     TO PLAY AGAIN"
1590 IF INKEY$="" THEN 1590
1600 GOTO 340
1610 FOR WT=1 TO 1000:NEXT WT
```

ACU


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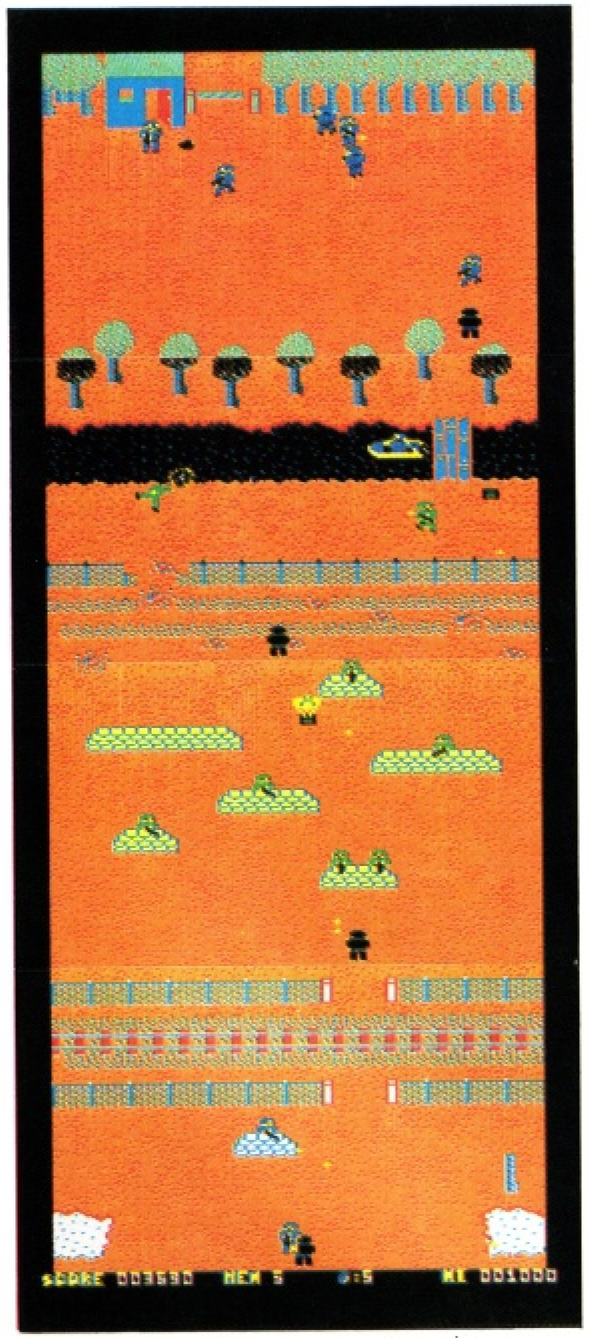
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LEVEL 2



LEVEL 5





LEVEL 8



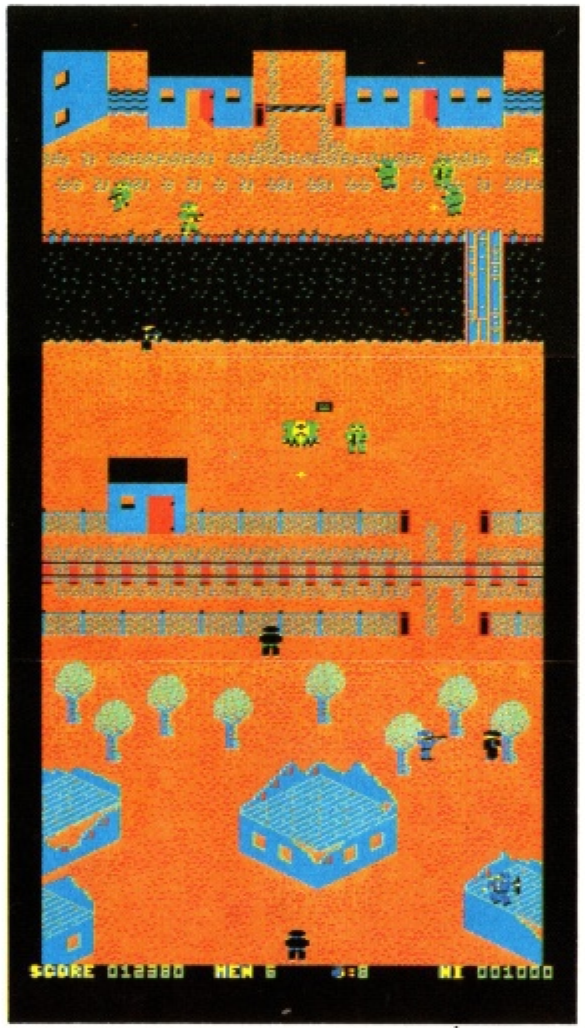
LEVEL 2



LEVEL 1



LEVEL 4



LEVEL 3



LEVEL 7



LEVEL 6

S WINS II

Amstrad Business Computing

The supplement for Amstrad Business Computer Users

Free
July 1986
Volume One
Number Eight







Accept no substitutes.

At a recent exhibition we met several unhappy spreadsheet users. They had visited their local Amstrad dealer and requested a copy of ScratchPad Plus. Whereupon they were told that "one spreadsheet is much the same as another" and by coincidence, the one the dealer happened to have in stock would be "just what they required".

When they eventually saw ScratchPad Plus demonstrated, they discovered that what they had been told was rubbish. By then though, it was too late and they were left with the irritation of a substitute.

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A one-act farce

Out of an estimated half million victims, only 60,000 have succumbed. To what? The Data Protection Act, of course. Yawn? Yes I know it isn't a very exciting piece of legislation, or at least it wasn't. But hang-on, it promises to become a lot more interesting, now that hardly anyone's taking any notice of it.

Just think, in the none too distant future little black vans will be patrolling the streets, checking registration cards and, oh boy, if you don't have one . . . if you don't have one, well all sorts of nasty things will happen – probably.

What started out as a reasonable idea has been watered down into one of the best legislative jokes this decade. Even the seat belt law made more sense than this one. The sadness of the episode is that the Act betrays the ignorance of those whose creation it is where the use of personal computers are concerned.

Far from affecting only a few thousand corporations, who could be safely judged to have the time and resources to complete the frivolous form and bide by the uninforceable regulations, the legislation has criminalised many hundreds of thousands of people – no mean accomplishment.

The scope of the Act is too broad and yet too narrow. Take the case of a magazine subscription list which is used simply to print out the address labels for each subscriber. That database must be registered, unless, and this one's a cracker, all of the people on the list consent to their names being held on computer!

For a magazine with a large number of subscribers already, getting universal consent is next to impossible. Yet while the Act considers a magazine subscription list to merit registration, this is only the case if the list is held on computer. If the subscribers' details are held on little metal address plates, well then that's OK.

Information can be just as inaccurate and misleading irrespective of whether it is kept in an old shoe box or on an ICL mainframe. The implications of the Act's excessive scope could be very serious. Take the case of our Doctor Edwards whose very worthwhile, and potentially lifesaving, designs on cheap computer technology could be thwarted.

Isn't it enough that the doctor should tackle the practical problems involved without having petty legal hurdles to contend with? If one doctor was dissuaded from using the technology to prevent the unnecessary deaths from preventable diseases, what then do you think should be done with the pretty bureaucratic forms?

The final lunacy of the Act lies in its exempting those who have the most power to completely mess up the little people's lives – such as the police, the Social Services and the Inland Revenue. I can't help feeling that I would have had a little more sympathy for an Act which brought the bureaucracies down to the same level as me. What hope is there for an information revolution when we have to cope with this sort of burden?

Don't get me wrong, I'm all for the protection of individuals, but let's find a method that's workable and useful, because this Act works for no one.

Jeremy Spencer

CONTENTS

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Clear, helpful manual with 12 lessons and sample spreadsheets already on disc. On-screen HELP. Advanced guide. 6128/8256/8512. (Amsoft/Sorcim/IUS)

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NEW

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The makers offer FREE one month's after-sales support while you get used to the package and 12 months support for just £50 if you need it.

8256/8512. (M.A.T.) Programs separately £49 each. All four only £149.

AUDIO TUTOR

What the manual never taught you! Two double-sided audio cassettes take you through 4 forty-five minute, step-by-step lessons. Follow the instructions at your keyboard and learn to get the most out of your Amstrad soonest.

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Save £5.00 on recommended price. Disc only £44.95

HITCH-HIKER'S GUIDE

"An excellent buy. If you are a "Hitch-Hiker" fan, even if you find adventures the most boring thing on (or off) the Earth, you should buy it ... pure Douglas Adam's genius." (Amstrad User 03/86)

YES, YOU CAN PLAY GAMES ON YOUR 8256! "The Hitch-Hiker's Guide to the Galaxy" runs on 6128/8256/8512. It is one of the most famous of all games running under CP/M and is a text adventure which follows the original story fairly closely. The OPTIONAL HINT BOOK CONTAINS ALL THE CLUES AND HINTS YOU MAY NEED. 'Magic' pen reveals only the clues you want. £5.75.

For 6128/8256/8512. HITCH-HIKER by Infocom: Disc £29.95. Hint book £5.75.

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NEW

"Newword does just about everything Wordstar will do and much more besides. If you're used to Wordstar, you'll find no difficulty at all with Newword and you'll be delighted at the additional features." (Computing with Amstrad 05/86)

"Newword should have enormous appeal to two different sets of people: 6128 owners who can afford a second disc drive and 8256 owners who want to go beyond Locoscript ... this package is unbeatable." (Amstrad Action 04/86)

Newword also has a 45,000 word spelling checker on side 2. 6128 owners need 2 drives. 8256 owners can manage with one, plus built-in drive 'M'.

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NEW

MASTERFILE 2.

NEW

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"Of tremendous value to anyone wanting to become involved in graphics programming ... as good as you're likely to get." (Amstrad Action 02/86)

"Brilliant new games-writing aid ... the manual is thankfully comprehensive and easy to follow ... more than just a games designer, it's a major shot in the arm for your computer, driving it to new heights of performance. It's in a completely different league to any sprites or games designer package you may have seen before." (Popular Computing Weekly)

Laser Basic adds 200 new commands to your BASIC and lets you create arcade games with music, sound and action.

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7-86

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ABC

REVIEW

The write way to do it

If you really want to impress your friends what you need is a bit of concurrent execution. And if you think the jargon is flash, just wait until you see the illusion it creates. IBMs – who needs them?

Every now and then a package appears which, on the face of it, appears to have little value. At first it's very hard to appreciate the value of this little gem – one is far too impressed by the cleverness of the thing, almost failing to pay any attention to its day to day value.

Write Hand Man is a notebook cum phone book cum diary cum just about anything else you can think of. Now I know there are lots of boring little programs out there which provide these sort of facilities, but the important difference is that this package can be called up at any time, even while you are entering your budget into SuperCalc, or editing from your word processor (so long as it isn't LocoScript). Therein lies the real value of this tool – you don't waste time loading it in as it's ready for you at the touch of a key.

Pure magic

So how is this magic achieved? The clever part is done by a file called WHM.COM. Before you load in your application – word processor or whatever – you simply fire up Write Hand Man and it will find itself a little niche way up there in the memory. For convenience this can be done automatically from within a submit file. At this stage the program is only loaded, it isn't active but all that's required is the simple introduction A:WHM B:ON.

This tells the computer to look on the A: drive for the WHM.COM file but on the B: drive for the applications and data files. Of course you can organise the location of the COM file and data files to best optimise your disc space.

Once activated the program is invisible and you can carry on with your work as normal. The only difference is that it is sitting up in memory watching over your every keystroke just waiting for the key press which calls it into action.

The install program allows the user to select any key to act as the activating key. I chose Ctrl J. As soon as you call up Write Hand Man a little window opens on the left of the screen (15 characters by 11 lines) giving the list of options. At the top of the window the program waits patiently for you to select one of the options.

Notepad

The notepad function opens a window 32 characters by 8 lines – that's one page but there is no restriction to the number of pages other than the room left on your disc. Moving from one page to another is accomplished by pressing Ctrl J followed by the page number. Ctrl F and Ctrl B will flip forwards and backwards through the pages. Cursor movement within a page uses the traditional Ctrl diamond cluster E, X, S and D.

The latest version of the package also allows insert text to be toggled on and off with Ctrl V. If you want your little notes printed then Ctrl O will send the page over to your printer. To return to the main menu simply hit Escape (or stop) and the contents of the pages will be saved to disc. The notepad, and other functions, provide a cut facility which allows you to remove up to 95 characters in any single cut, and paste them into the application you are working with.

The phone book

The layout of this function is exactly the same as the notebook but instead of jumping by using page numbers each page is addressed via an alphabetical reference. The standard phone book only allows room for 13 pages and since you might have quite a few entries under C-D, this might be a little inconvenient. To get round this problem, especially for those who have a gregarious appetite for storing phone numbers, there is an application called Bigphone which can be activated from the O option on the menu. Bigphone allows for the sort of list an aspiring social climber might want to keep. Instructions are provided to explain the method of making Bigphone come up from B on the menu.

An interesting, though I must admit untested, feature is the program's ability to send the stored phone numbers out through the serial port to an autodial modem. Not only will the software support the American Bell tones but it can also cope with good old BT's pulse dialling as well. Again the instruction manual gives full details on this option.

Calendar

Using the same editing functions as the notepad, calendar allows appointments for a two week period to be maintained. Ctrl J jumps between days in the first week while Ctrl P has the same effect in the second week. Ctrl C copies the second

week into the first so you can always update one week in advance.

DIR

Using the D option you can call up the directory of any drive you choose. Better still you can define a mask for the directory – perhaps you might only want to see .TXT files on the B: drive, in which case tell WHM B:*.TXT and all the files corresponding to the mask will come up in the window. The times I have wanted a feature such as this justifies the package alone.

View

Works in the same way as CP/M TYPE command, except, of course, that the contents of a text file appear in the window. The feature can be put to good use if you use the cut option to take pieces of text out of one file and place them into the one you are working on.

Keys

The keys option is used for editing the contents of the eight Write Hand Man key macros. Basically eight keys on the keyboard can be defined with a content of your choice. The definitions can include control sequences and a command asking for additional input from the keyboard. If your word processor requires complicated control commands (keys pressed while Ctrl or Alt are held down), then these can be built into the keys of your choice. The only drawback is that a cut operation will overwrite the definition table, but the handbook describes a rather neat way of calling back the previous definitions.

```
1 - Monday                          |
get up and go to work               |
meet the man about the dog          |en you receive you copy you are+
Start being nice to the             | together with each of it's+
Neigbours!                          |d in your application you simply+
2 - Wednesday                       |lf a little niche way up there+
In laws for dinner, hide            | be done automatically from+
                                    |ge you can't call up any of the+
                                    | in memory it hasn't yet been+
                                    |e to do that immediatly. The+
                                    |s the computer to look on the A:+
This is the Calendar█               | the B: drive for the+
------------------------------------ allows optimum use of disc+
space. Once you have activated the software you can carry on as+
normal, the only difference being that WHM is sitting up there+
watching over your every keystroke just waiting for the key press+
which calls it into action.

You can select any key you like, I chose CTRL "]". As soon as you+
call up WHM a little window opens up on the left of the screen+
(15 characters by 11 lines) giving the list of options. At the+
top of the window the program waits patiently for you to select+
one of the options.
 Options: C D F G I M N R S X Z CR / LF TAB ESC ?
```

Using Write Hand Man with Super Writer

Calculate

Another really useful feature. It behaves in the same way as a four function calculator, including the ability to save results to memory. Computers aren't as accurate with figures as calculators but for every day use this is fine. If you want to work with hex numbers then a hex calculator can be called up from the O option.

And there's more . . .

Apart from the standard options there are a lot of other exciting applications to explore. How about a Swap command which allows the current application to be stored and then another, perhaps a spreadsheet, to be run instead? When you have finished with the spreadsheet you can swap the first application straight back in, and it will return to you in the same condition as when you left it. Enough information is provided to let those who have the nerve and ability to write their own applications, but like Swap this feature is really for those who are experienced CP/M users.

```
Write-Hand-Man |
Enter Choice[█]|
 A - Notepad   |agic achieved. When you receive you copy you are+
 B - Phonebook |all it on a disc, together with each of it's+
 C - Calendar  |s. Before you load in your application you simply+
 D - Dir       |it will find itself a little niche way up there+
 E - View      |f course this can be done automatically from+
 F - Calculate |file. At this stage you can't call up any of the+
 G - Keys      |e, although it is in memory it hasn't yet been+
 O - OTHER     |people might chose to do that immediatly. The+
---------------IM B:ON. This tells the computer to look on the A:+
drive for the WHM.COM file but on the B: drive for the+
applications and data files. This allows optimum use of disc+
space. Once you have activated the software you can carry on as+
normal, the only difference being that WHM is sitting up there+
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top of the window the program waits patiently for you to select+
one of the options.
 Options: C D F G I M N R S X Z CR / LF TAB ESC ?
```

The main menu is easy to use

One step nearer the paperless society

This really is a worthwhile tool for those who find themselves sitting in front of their computer for most of the day. And even those who only use their computers a few hours a week will appreciate the directory option and the cut and paste facilities. Of course this package isn't as tidy and as polished as Sidekick on the IBM PC, but then you don't have an IBM do you?

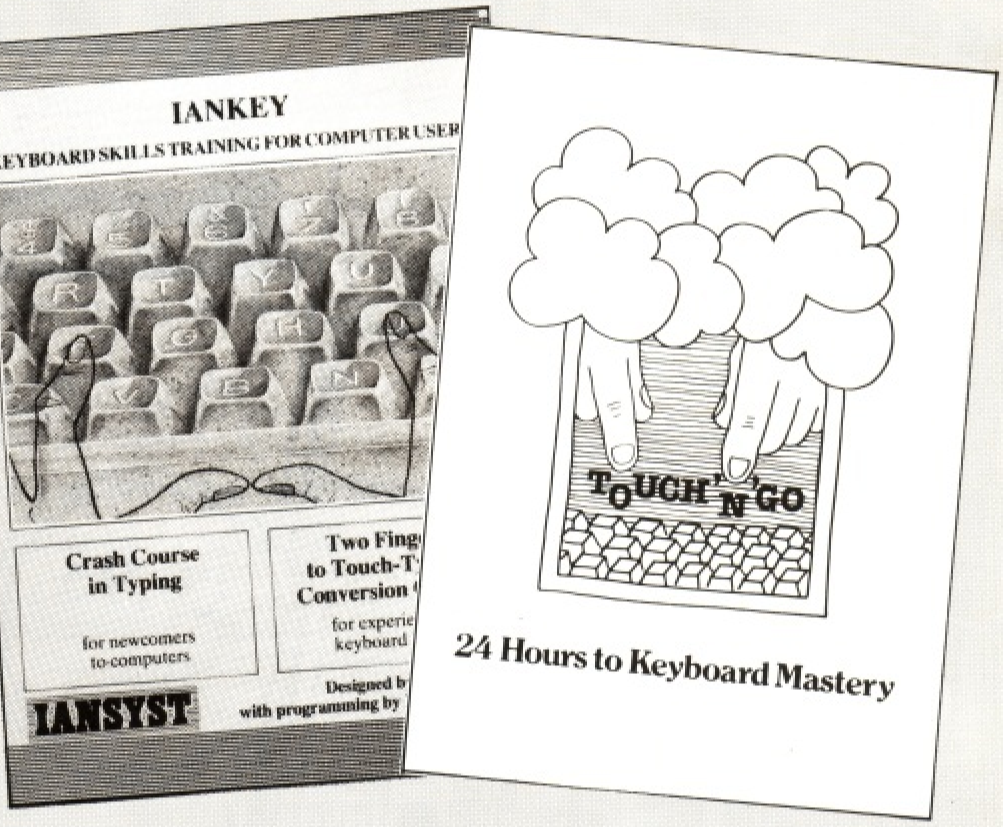
Those lucky people with two disc drives will have no trouble accommodating all the necessary files on disc but single disc users will have to be a bit more selective. The memory drive isn't at all suitable unless you make sure you save out the altered files.

A really worthwhile program which is as useful as it is clever.

Write Hand Man £24.95
Available from Hi-Soft (0582) 696421

ABC

ABC
REVIEW



Two-fingered typing

Well-known for his dabblings with word processors, Cedric Evans tries his hand at typing tutors. Can the two programs from Caxton and Iansyst teach this incompetent idiot anything about typing – or does he just want the discs?

Go on, admit it. Two fingered typing is OK for pedantic programmers and gormless games addicts but for real, polished, professional speed and accuracy – and for career-minded secretaries and office juniors – only correct, 10-fingered touch typing will do.

It used to take a boring course of evening classes to achieve the keyboard skills needed in today's offices, but now, using the new disc-based teach-yourself courses on the CPC6128, PCW8256 and 8512, almost any fumble fingered fool can quickly achieve respectable speeds.

The full advantages of word processors only really become available when you can belt in the text at the near-thinking speed of 80 words a minute. There's no need to compose the prose, structure the clauses, check the spelling, struggle for that elusive word or even finish the sentence – just pour it in and sort it out later using all the power and clever gimmicks of the processor behind the keyboard.

But if your fingers stumble along behind the ever searching eye and your thinking is thwarted by the cruelly crawling cursor, then you haven't a chance to capture that fleeting thought, that timely turn of fancy phrase or that clever convoluted concept which reveals amazing creativity and neuronal activity.

No, you are too busy looking for the wretched K key.

Now anyone can do it

With less than the effort of one year's worth of prodding Delete plus the aid of either of these simple typing tutor programs, you can almost think straight on to the screen through the keyboard.

Two popular typing programs are Touch 'n Go by Caxton Software and Crash Course by Iansyst. Both will get you to respectable speeds within a few hours of dedicated effort and to full copy typist speeds within days. But which one will suit you best?

Both programs come on single discs with sufficient documentary information for any novice to have them copied, booted up, and running under CP/M within a minute or two. Both give on-screen selection of the typing tuition required, such as letters, figures, text, speed skill level and so on, and both will save on disc the results of your labours as accuracy scores and achieved speed.

The Crash Course also has a how-to card for quick reference to the control key functions and a help page reached by pressing Escape, which will allow selec-

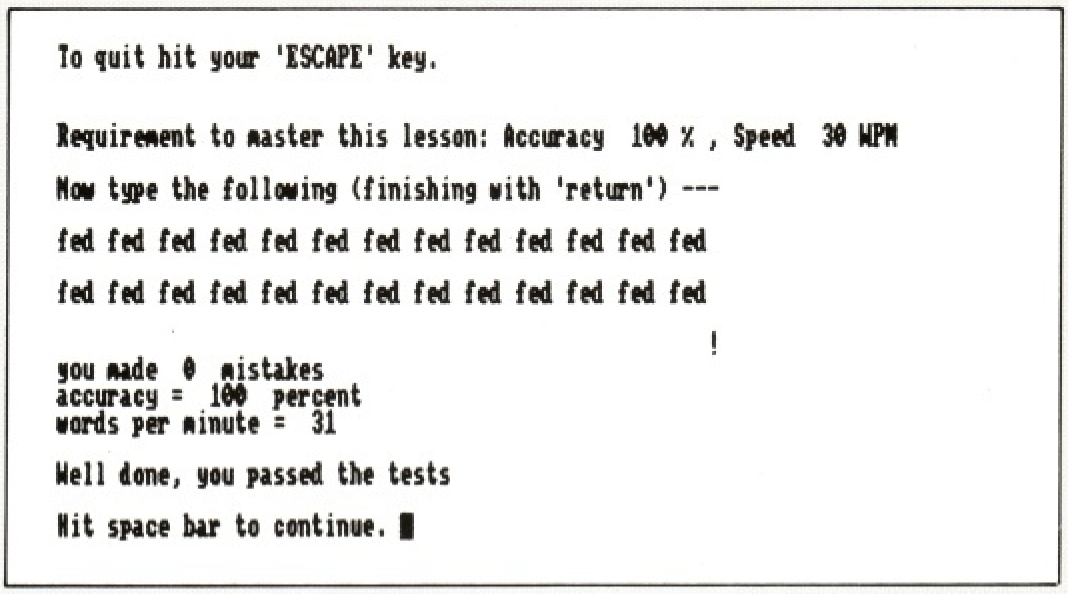
tion of the target speed, the target accuracy, bleep on/off, repeat test and lesson/exercise choice.

These selections also appear on the screen, so the most useful information on the how-to card explains how to set and stop the test timer and save the results to disc.

The Touch 'n Go program saves all results automatically and any of the previous session's results before starting a new lesson.

From here on the two programs differ somewhat in their teaching philosophy. Those who have struggled to learn Morse code will appreciate the style of the military signals type of approach – that of "pour it on them" until they know it. This is the philosophy behind Iansyst's Crash Course. It's hard in that you feel you're getting nowhere, until you suddenly realise you are copying 18-20 words a minute.

The alternative amateur approach is to learn the code gently, noting all the opposites, the similars and finally the oddies. Speed gradually builds up and you may be encouraged by being aware all the time of precisely how fast you are copying the code. There is some similarity in the approaches of these two courses.



Getting going with Touch 'n' Go

The fingers grow number . . .

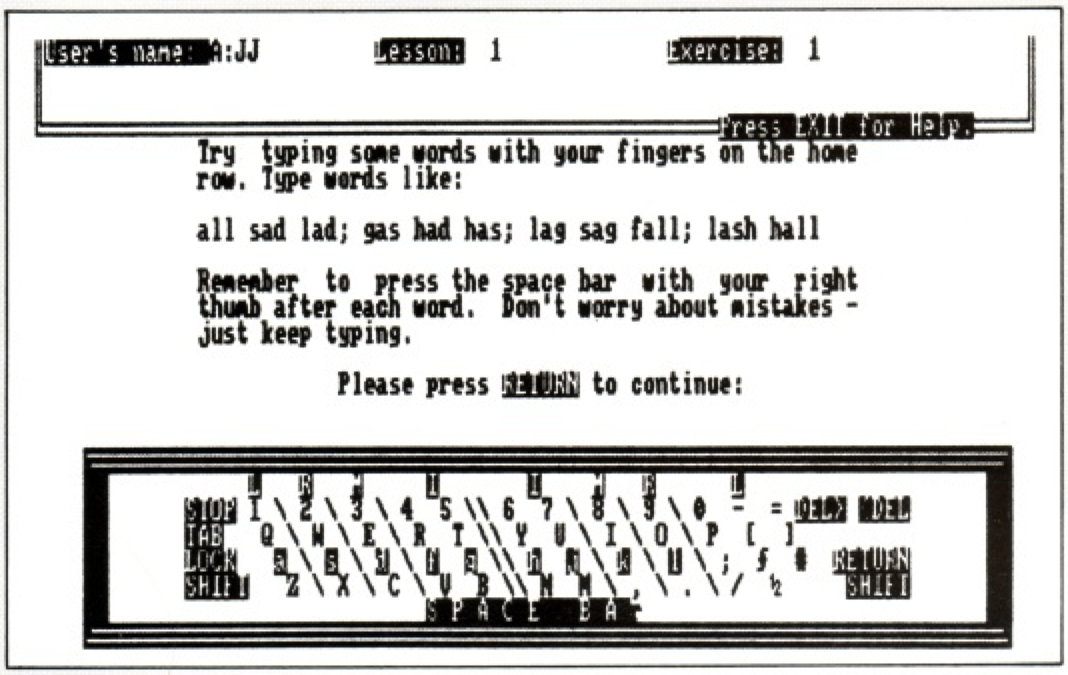
The Crash Course teaches a classroom-like disciplined fingers-on-the-home-keys technique right from the start, much as a college course does. The user is expected to copy lines of text as they are printed on the screen. To begin with you will be asked to concentrate only on the middle row of keys and the words you must copy will be made up from the letters in that row.

Since you cannot see through your fingers you have to look at the screen to find the letter you want if you can't remember which finger the letter is under.

Progress seems slow at first due to the combined difficulty of trying to remember where the letters are on the keyboard plus the problem of acquiring the manual dexterity to hit the intended key firmly and cleanly. The early problems encountered with this course are mainly due to errors in digital accuracy, rather than failing of memory.

In contrast, the Touch 'n Go course concentrates at first on the business of learning the key positions by making the user type the same key again and again. The idea is that you should learn which finger strikes which key.

As you become more advanced you will be confronted with more complex tasks – perhaps a sequence of identical three letter words, and later still four letter words, but this time all different. This approach seems a little tedious but it is surprisingly effective if you can remember the fingers you were taught to use on the appropriate keys. With Touch 'n Go it is an easy matter to select the required lesson, or to revise earlier lessons.



Lesson one from Iankey

. . . and fall off

The choice between these two approaches will depend on the individual's dedication and, to some extent, on the time available for the overall course and for each lesson.

The Crash Course concentrates on developing good habits from the outset, and pushes the student to rapid improvements through rigorous exercises, while the technique of Touch 'n Go is reminiscent of many home tuition courses which, by allowing a slightly softer approach, maintain the student's enthusiasm and sense of achievement. Indeed, the Crash Course is designed for use by individuals or for classes.

And the best position?

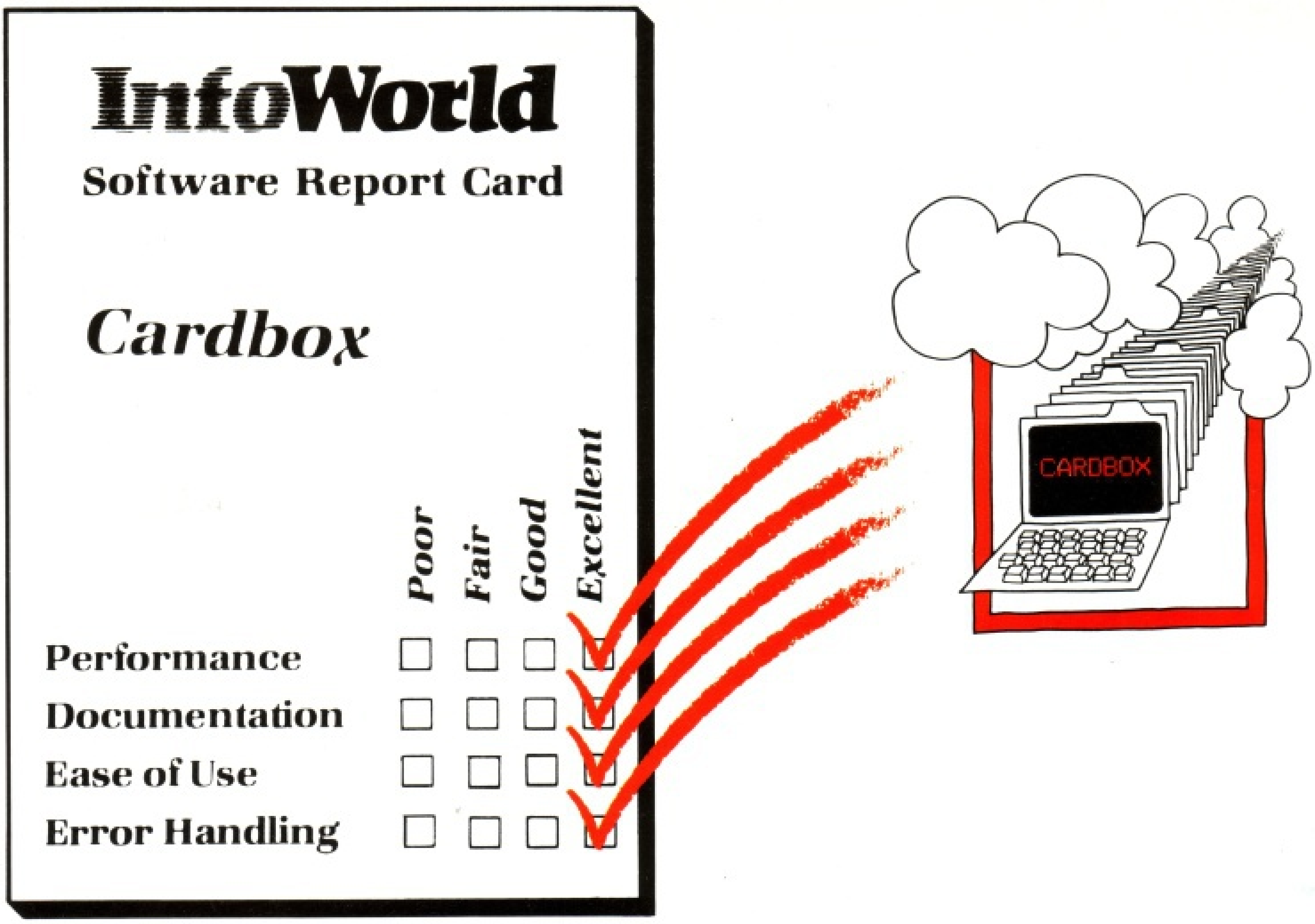
A weakness of both programs is that among all the usual guarantee cards and advertising bumph which is packed with the discs neither product gives any advice on hand/wrist/finger/action, seating posture, eye lines, or keyboard/VDU fatigue. Despite this criticism both programs are an excellent way to progress quickly and easily from prodding mediocrity to skilled professional typing and will allow the full potential of modern word processors.

The writer's preference?

Crash Course might be able to get you to a reasonable standard more quickly than Touch 'n Go but the layout of the Iansyst program is a lot more complex and overbearing. For its slightly more user-friendly approach and the ability to step back briefly and brush up on previous lessons, I preferred Touch 'n Go.

Although both systems used different approaches this is necessarily a subjective opinion. Iansyst gives a lot more information and the practice tends to be a little more interesting so requires less discipline to stick at than Touch 'n Go.

ABC



Why settle for less?

OK – so you've never heard of InfoWorld. That's hardly surprising because it's published in America. It does however happen to be one of the most widely-read software magazines in the world.

When we launched Cardbox several years ago, we sent a copy to the editor. Because the Americans have software products coming out of their ears, it was an honour when he decided to publish a review for us. Even more of an honour when we discovered what he thought of it! Over the past five years you could probably count on your fingers the number of products that have achieved this sort of acclaim.

Cardbox is simply an electronic card-indexing system – a replacement for the cards on your desk.

It's famous for the speed, and flexibility with which it can find cards for you. Unlike the cards on your desk, you can have any number of keywords on the card, anywhere in the entire file. Personal Computer World said "...from my initial tests, the fastest of any package I've evaluated so far..."

But it's not only fast. You can design the layout of the cards completely to your own requirements and find cards easier than by any other method. In fact, Computing Today proclaimed "This product is totally idiot-proof!"

You wouldn't use Cardbox to design an invoicing system, or produce calculated reports – it wasn't designed for that. But you would use it for keeping track of your enquiries, customers, suppliers, product details, membership records, library details – or just about any other type of information you need to find quickly and easily. And because Cardbox links with CP/M word-processors like WordStar and New Word, if you require an easy to use, but superior mailing list facility, there's nothing better.

Furthermore, because Cardbox is so easy to use, we are able to offer you FREE and UNLIMITED telephone support. Should you need help just call us. Your call will be welcomed and your query will be answered in a pleasant, helpful and efficient manner – because that's the sort of people we are.

Cardbox is £99.99 (inc VAT).

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ABC FORUM

ABC FORUM is for you to air your opinions – not just grievances but praise as well. If you have any hints and tips let us know by writing to: ABC Forum, 169 Kings Road, Brentwood, Essex CM14 4EF.

Here we go again

Having recently bought a PCW8256 and having discovered that I need a second disc drive, I am somewhat put out by the subsequent, almost immediate, announcement of the PCW8512.

The cost of a second disc drive and possibly memory upgrade for the PCW8256 seems disproportionate given the price of the PCW8512. I feel that, at least, the second disc drive should be offered to later purchasers of the PCW8256 at a more reasonable price.

R.M.W. Rash,
Norfolk.

ABC: *It seems strange that the only company which upsets customers with its upgrade policy is Amstrad. In part this is due to its determination to offer value for money and also its almost obsessive secrecy about future products. We have been through a saga like this when the 6128 replaced the 664 machine.*

What can I say? And my explanation of the still high price of an upgrade isn't likely to please you either. If Amstrad lowered the price of the second drive units it is certain to find that the demand would outstrip supply, thus putting supplies of the PCW8512 at risk. I knew you wouldn't be pleased.

Where's polly gone?

I should be grateful if you could give me the address of Arcom software or that of a supplier where I can obtain the Poly programs for the PCW8256.

F. Topliffe,
Oxford.

ABC: *Leafing through the magazine the only advertiser I can spot selling any of the Poly programs is NewStar. There seems to be a lot of interest in the PCW's graphics potential (or lack of it) so we will keep our eyes open for similar packages.*

Typesetting on an Amstrad

I am the proud owner of the Amstrad PCW8256 and I have nothing but complete praise for it. It has made my life in a fairly busy parish so much easier and far more efficient.

However there is one thing I would like to know on the word processing side. Can I create two vertical columns, side by side as in a newspaper? If so, how?

Rev. Alex Walker,
Kendal.

ABC: *I presume that what you really want to do is to produce your text printed in two columns – for a newsletter – rather than editing it on the screen in columns.*

There are two ways to approach this problem. If you confine yourself to Locoscript, print out your text in narrow columns, cut it up and stick it down. Well, that's how it's done at ABC (except we use a typesetting machine).

There is another way if you have, or are prepared to buy, a different word processing package. There exists a utility which will allow a file, created by either NewWord or WordStar, to be printed out in a number of columns. With a little practice you will be able to produce text in a variety of column widths and "set" it to allow for pictures to be placed within the text. The bad news is that if you haven't got a suitable word processor you will have to buy one, but the column printing ability is free – it's public domain.

If you send me a disc – with a letter to jog my failing memory – I will make sure you get a copy of the files. (Just the Rev. please, we will be telling you all how to get hold of this sort of software soon enough.)

Limits in Loco

Having recently bought a PCW8256 I would appreciate any advice you can give me on Locoscript. I bought the PCW because I had a real need for processing long documents. And while I am quite satisfied with the computer itself, I find Locoscript seems to operate far too slowly for long document work when it comes to editing and saving. Now whether this is my handling things wrongly I am not sure and the reason for writing.

On saving, the computer insists on scrolling through every page and on a 40 page document you will appreciate the length of time this takes. This applies equally to moving from the beginning and to the end of the document – there does not appear to be an immediate process for this purpose, despite the fact that the PCW is a word processor.

Either this is an anomaly which is built into the program or there is some element of operation I am not doing correctly. I would appreciate your advice. If it is a limitation within the program then could you advise me of any other commercial program that will work on the PCW beyond that of NewWord – which eliminates the above problem but cannot be properly matched up with the printer in terms of letter quality printing and the time it takes to print any sizeable document.

Walter Parsons,
Royston.

On behalf of colleagues who are potential customers of personal computers, I would like to ask whether the PCW8256 is capable of printing out legal documents of more than one page?

Does this widely advertised machine with its word processor Locoscript No. 1 disc, serial no.AMS8000, in fact print out documents running to 10 or sometimes 20 pages, as required for court cases?

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claim that it can handle "a complete 100-page contract". Is it possible with the No. 1 disc?

One of my lawyer colleagues had keyed in just six pages when he was stopped by a repeated whistling noise – and the PCW8256 printer refused to print out more than one page. When the dealer put the disc into his own PCW8256 he got the same result. How, then, does one print out documents running to 10 or 20 pages at a time?

Today a dealer said, after phoning Amstrad for advice, that "an updated" disc is available. Is it the case, then, that the No. 1 disc as sold with the PCW8256, has had to be superseded?

D.S. Massie,
Farnborough.

ABC: *The simple answer is that while Locoscript can handle long documents (including a 100-page one) the manupulation of large files is not one of Locoscript's strengths. It is simply a case of horses for courses. My own favourite word processor, SuperWriter, can only handle text files up to 22,000 characters – if you want to edit larger files use a different system.*

I don't attribute the whistling Joyce problem to Locoscript. There must be some other reason why it stopped printing, a reason which clearly escaped your dealer.

In cases where there are large text files (files with more than 20k) I would recommend that you either split the file into halves or buy a system which is better able to deal with large files such as NewWord or WordStar.

Of course large text files take longer to print but the speed of any word processor is dependent on the speed of your printer. The Amstrad printer is more than adequate for most applications but again it's a case of making sure your equipment is suitable for the task.

I would strongly recommend that you consider buying a printer which can print with the same quality but at a much higher speed. NewWord will print in high quality and at the normal speed but what it won't do is give you the flexibility of the pure Locoscript package. Large text files are a peculiar application and you must either have the equipment or the patience to suit.

Music from a Joyce

I am interested in music and own a Casio CT-6000 keyboard which is equipped with the Midi system for interconnection with other electronic music units. I understand that it is possible to purchase software to interconnect the keyboard to a computer terminal via the Midi system such that one can store digitally with a view to multi-tracking and hence to the building up of harmony.

Could you please tell me if software of this type exists for use with my PCW8256? I would also be pleased to know of any other music based software that may be available.

David Green,
Crediton.

ABC: *Yes, it is possible to control all manner of electronic music boxes via a Midi interface. Next month's* ACU *will carry a review of just such a gismo, the only problem being that as far as I know there isn't a Midi for the PCW machines, only for the CPC range – though I gave up being surprised years ago. Anyway see what you are missing next month.*

More fun with Alt and Enter

In May's *ACU* the article "Time to re-Joyce" complained about the Shift Lock key – which would be a lot better off as a Caps Lock key. However there is an easy way to overcome this. Alt with Enter will put on the Caps Lock – caps will appear in the top right hand corner.

Other combinations of Alt with Enter and Relay keys will result in various other modes including NUM and C & N which do slightly different things.

Robert Luten,
Purbright.

ABC: *Thank you Robert, but I am still complaining. I should have thought that since Caps Lock was the more frequently used key state, it should have been given the key with the pretty red light.*

Problems, problems

Before Christmas I bought the Amstrad PCW8256 which has been very useful regarding the writing work I do. Unfortunately, even though most of the instructions and procedures are easy to follow, I have encountered some problems.

1. I find it difficult to set up my own documents with page numbers, and impossible to print only one selected page from a document. I believe the recent Locoscript software provides easier page numbering and has the selected page facility. I read in your magazine that Amstrad will exchange the old Locoscript software for the new. Could you give more details please?

2. I recently read of the forthcoming PCW8512 and wish to enquire whether it is possible to update the PCW8256 to the same running capacity? This was suggested but the info was a bit vague. If so, how much will it cost?

3. The PCW8256 is sold with CP/M software, utilities and Dr. Logo. I find the installation of this software difficult to understand and to run. I had to visit my retailer to find how to install Dr. Logo and he was surprised to discover that he had trouble himself. The instructions in the smaller section of the Amstrad User Guide on Dr. Logo mentions the command SUBMIT LOGO. This doesn't work. However at one stage I managed to load the program (I've no idea how it happened) to discover that the 'SAVE PIC' command didn't work.

Should I have processed the disc I attempted to save the picture on in some particular way? Even though the file seemed to be recorded I couldn't bring the image on to the VDU. This last point seems fairly irrelevant now as I'm still baffled in getting Dr. Logo software to run.

4. Because of the cost of the PCW8256 various short cuts were taken. My concern about this is the safety screen. I believe it emits more radiation than most VDUs. Is there some other plastic screen or protective device that can be bought from Amstrad, as an extra?

Many thanks in advance for any help you can give me with these problems which are my only niggles to a splendid machine.

Michael Clifford,
Leics.

ABC: *1. Yes, there are a few problems with the early versions of Locoscript and to date Amstrad's offer to exchange your disc for one bearing the improved version is still open. I suggest you get in touch with Amstrad customer services on 0277 230222. (By the way, they do answer the calls – it's just that they get rather a lot nowadays.) If you prefer you can just post your original disc back and, in the fullness of time, you will get a replacement.*

2. (a) Yes. (b) Getting another drive fitted can cost up to £150 and a memory upgrade service is offered by some companies for about £40.

3. I suspect you are trying to load Logo from your original CP/M disc and this is very naughty. A submit operation can only work if a temporary file can be written to the disc. Since the supplied disc are irrevocably write-protected submit will not work. For the same reason any attempt to write a file from Logo will meet with pitiful results.

Logo can be made to work from the supplied disc simply be typing LOGO but this bypasses the submit operation with the result that the keyboard is incorrectly configured. Now be a good chap and copy the master disc (lookup disckit and put them away).

4. No. Anyway with the recent events outside Kiev I should have thought that the degree of radiation emitted by a VDU (Amstrad or not) paled into insignificance. Phew!!

ABC

ABC REVIEW

How to keep your sanity

Getting your accounts computerised can be a very painful business, but never fear – ABC's terrible duo, Debit and Credit, begin their regular section with some wholesum advice which should keep you on the straight and narrow. (Debit and Credit appear courtesy of Barry Pickles and John Burk.)

Many people who have acquired a personal computer for their businesses eventually assume a glazed look and begin to haunt their local computer dealer – perusing the shelves packed full of software packages. This curious behaviour stems from a suspicion that they are not using the full potential of their new electronic tool.

If you recognise these symptoms in yourself, then allow us, over the next few months, to guide you down the correct path, avoiding the many cul-de-sacs that you might be tempted to wander into.

If you were to ask any computer consultant about using a micro in your business, you would be told to go and check out some software packages until you found the ones that suited you, and only then find a computer system which could run those programs. Here we assume that most of you will already have one of the PCW systems – or at least an Amstrad capable of running CP/M Plus – so we must approach the subject in reverse order. Don't allow this to discourage you. As it happens the Joyce has all the elements of a good, basic, system and CP/M affords you a very wide choice.

Throughout this series we shall be counselling caution and a slow, but sure, approach. We will begin by considering three important points:

1. Will a computer really help your business?
2. What are you going to use the machine for?
3. How will it affect current working practices?

The answer to the first question depends very much on the specific details of your business. If you process fewer than 60 transactions a month, the chances are that there will be little benefit in computerising your accounts, although one of the VAT processing packages could be useful, bearing in mind the number of sane people reduced to gibbering idiots come the end of the VAT quarter.

In answer to question two we assume that you are already using the machine for word processing at some level, and so are familiar with the actual operation of the keyboard and disc drive. Since bookkeeping is the task that most traders find the most irksome, it seems reasonable to make this the next step towards your electronic office. In fact, we maintain that if you can successfully computerise your accounts, this provides a very solid base for more ambitious projects which we will discuss later.

Question three is one that very few users really consider. It is too easy to be blinded by the technical wizardry of computer systems at the start, only to be brought down to earth later when you suddenly find that you may have to change the habits of a lifetime in order to use the package. If you have staff who will use the system, it is important to get their reaction as well. Nor must you fail to account for the costs of any retraining that may be necessary. Remember that the aim of all this is to improve your business efficiency – but computers are just as effective as tools of chaos.

Base camp – planning

Having got to this point, you should now begin to plan the conversion. Write down the stages you need to go through and set up a timetable – inevitably, you won't keep to it, but it will give you something to aim at. Find out what information you will need, how you are going to present it to the computer and discuss this with any others involved, including your accountant.

In your planning, allow time for a trial period where you can run the computerised system in tandem with your existing system – this will allow you to weed out any bugs and get a fairly accurate assessment of the benefits gained.

Finally, before going on to specifics, here are two golden rules, derived from many years experience with computerised business systems:

Computers are not immortal. Sod's Law dictates that they will break down at the most inconvenient moment. Try not to put yourself in a situation where your business grinds to a halt if the computer goes down.

Data storage is corruptible. Make it a

hard and fast rule that every day you will make back up copies of all the data files used that day. That way, if you lose the information on a disc, you still have another copy tucked safely away.

People are human beings. Considering the versatility of modern computers, we are constantly amazed by the number of systems which require that the users make drastic alterations to their normal working practices to fit in with The Computer.

So there you have it. What? That's three rules? Well, it just goes to show that things never go quite as you expect them to! As we said earlier, we propose that the first project will be to computerise your accounts. The method which we shall outline applies, in principle, to any computer package and once we have got you producing useful information we shall go on to tell you how to use it in other ways.

Big businesses keep ahead in the field partly due to the quality of information presented to their management, information which shows where the company is going and which can signal potential trouble spots at an early stage. This information is gleaned from the everyday data that is constantly being fed into the system, and for which they pay large sums of money to be processed and analysed. The principle applies equally well to small businesses.

After we have covered the basic accounting setup, we will go on to add a payroll module and discuss why payroll is normally considered to be a function separate from the other accounts modules. Later we shall proceed to database and spreadsheet applications. Although you will find these discussed in other articles in *ABC*, we shall consider their relevance in processing the reports produced by your accounting system.

Integrated ledger modules and all that

Accounting packages come in all shapes and sizes. Some are "integrated", that is, that data files produced by one module can be used by others, without you having to repeat the input of information. So, for example, processing an invoice in the purchase ledger module would automatically update the stock level in the stock control module, without you doing anything more. Some integrated packages can be operated as stand-alone modules but will integrate with other modules you buy later.

Packages may or may not handle VAT transactions and you should note that those which purport to relieve you of the burden of your VAT return may not do so in a manner approved by HM Customs. In any event, if you are VAT registered and propose to use an accounting package, the VAT inspector will want to know about it. Whichever package you choose will depend upon your circumstances, but do involve your accountant.

When you have decided which package you need, don't rush back and fire it up – read the manual from cover to cover. This will tell you what information is required. Make lists of these and plan how you will collect the information. A specially designed form could help, both to crystallise your thoughts and to ensure that nothing is overlooked.

Have a go at filling in some of these data collection forms to give you an idea of the work involved and the time it is going to take you to get it all into the system. When allocating a timescale, allow time for the information to be double-checked. This may sound like overkill, but it is vital that your initial information be correct.

Talking about accuracy – if you are behind with the bookkeeping, get it up to date right now and keep it up to date, for now is the time to set a provisional date for starting up the system and entering the opening balances. This means that you will have to have a full audit since, again, it is vital that the opening balances be correct.

As we said before, it is useful to arrange to run the computer system in parallel with your manual system for a while, to allow you to spot errors, sources of trouble and do the necessary adjustments. Time spent now in getting it spot on will be rewarded later with meaningful reports.

You can't cook chips

Let us now consider the integrity of the information obtainable and what, in the immediate future, you should do with it. One aspect of computers that applies generally is the ability to correct errors until you get it right, as exemplified by word processing. Unfortunately, this does not apply to accounting packages. In fact, they positively prevent you from altering any data previously input, except by journal transfer, that is, making a compensating entry.

The days when you could gleefully Tipp-Ex out errors in your ledgers are now over! This means that, unless you want to make a rod for your own back, you have to make doubly sure that the information you put in is accurate the first time. It is widely observed that you are less likely to make errors if you discipline yourself to entering information on a daily basis, rather than putting it off and then having to do a lot of work in haste.

While you are planning this, use the same daily regime to ensure that you make a backup of all data discs used that day – and then keep them somewhere else. We cannot stress too highly that this will pay dividends in the long term.

Don't sack your accountant

We should make one thing clear right now. Although we shall get you producing the right type and quality of information, we cannot turn you into a qualified accountant. What we intend is that you use your accountant to analyse the information produced and prosper by following his expert advice.

You see, the other thing about computers is that they are good at information processing. You have the ability to call up reports more or less at will. This leads us to our next proposal, which may come as a shock to some of you, so we suggest that you get a hold of something solid if you are of a nervous disposition! We propose that, once a month, you call up a profit and loss report along with a trading account summary and pass this to your accountant for detailed analysis. This need not cost you an arm and a leg, and it should ensure a healthy company.

The problem with many businesses is not that there is anything wrong with whatever it is they are trading in, but rather that they tend to take a global view of themselves, often overlooking the warning signs that are present in the mass of detail. Small businesses often fail because the owners, while competent at bookkeeping, are not experienced in the financial aspects of running an expanding company.

Likewise, larger firms are known to sometimes make themselves ripe for takeover by not attending to detail. This is how large companies stay large, as we explained earlier. If you can't yet afford the services of a full-time accountant, our proposal is the next best thing, at substantially less cost and with the minimum of effort.

● *Back next month with more pearls of wisdom.*

ABC

ABC SPECIAL

Advanced Locoscript for beginners

Word Rap is a top-twenty record. Word Wrap is quite a different thing as Eddie finds out. All in a day's work inside a Joyce.

Julie and Pete had sneaked off, in the middle of a busy afternoon, to get away from the bustle of the document room and find a place to hide from Eddie.

"I don't think it has ever been this busy before", complained Julie, picking up an elastic band to play with. "Just wait till the second drive is installed", chirped Pete.

"Don't say that. Anyway, my dad says it won't make that much difference". "Eddie says it's bound to mean a lot of extra work". Pete replied.

"Only for the Disc Managers, and I don't care what Eddie says – it's mostly hot air".

"Hello Eddie", Pete spoke to the doorway behind Julie. Horrified, Julie turned to look at the empty doorway. Peter grinned.

"Oh, very funny", Julie said sarcastically, flicking the rubber band at Pete's ear. "Ouch", said Pete as the band thwacked into the side of his head. A short fight ensued and as Pete was about to place the rubbish bin over Julie's head she fixed her gaze over his left shoulder and said "Hello Eddie".

"Oh, ho, you don't get me with that one. Beaky's busy doing all the word-wrap this afternoon", chuckled Pete.

"Beaky's right behind you", said Eddie flinging his white coat over the chair. "We've finished editing today".

Pete turned round slowly and lowered the bin to the floor. "I was just showing Julie the best measures to take in the event of a cloud of nuclear fallout descending upon us", Pete ventured. Julie sniggered as an evil look appeared on Eddie's face.

"Well, seeing as you're so concerned about disaster precautions, I think tomorrow you had better take over my job for a day – just in case anything ever happens to me, you'll know what to do". Pete's face fell and as Eddie trotted off toward the canteen Pete turned to Julie and said "Now look what you've done".

"Me?" Squeaked Julie. "Yeah, you got me into this. Now you've got to get me out. I don't know anything about word wraps". "Oh it's easy". said Julie. "How do you think Eddie got the job in the first place?".

"I heard that, young Julie", said Eddie, appearing suddenly. He'd returned to pick up his coat. As Eddie trotted off once more Julie was going red. "Ha, ha, ha, serves you right" laughed Pete shoving the bin over Julie's head.

Later, Pete and Julie were sitting in the canteen. Julie was talking. "Don't worry, a few minutes' lesson on word-wrap and you'll soon pick it up. Now, how



much do you already know?"

"Oh, everything there is to know about word-wrap", Pete said confidently. "And hyphenation?" asked Julie. "Ah, I thought you might ask that".

"So the sum total of your word-wrap knowledge is nil", Julie stated. "No, not quite. I do know a little about word-wrap". "Okay, let's hear it". "What? Now? Right hear, this minute?" "Yep". "Er, well, it all began a long time ago". "In a galaxy far far away", Julie interrupted. "Word wrap is . . ." There was a long pause while Pete's brain warmed up . . . "what happens at the end of a line of text".

"Good, good", said Julie encouragingly. "Go on". There was another long pause as Pete's brain manufactured another sparkling gem of data. "When a word is too big to fit in the space at the end of a line", continued Pete, "it gets chopped off the end of the line and wrapped on to the line below. Words are

wrapped so that a break never appears in the wrong place in a word making the text look untidy".

"Yeah, that's right", said Julie, enthusiastically waving a tomato ketchup dispenser. Nothing now could stop Pete.

"The word gets wrapped when a character is placed outside the right margin or at a position that would take the current text over the right margin when the text is printed in its correct pitch. Editing a word that has been wrapped and making it smaller so that it can once more fit in the space at the end of the line, has the effect of making the word jump back to where it was before it was wrapped. To know how big the word must be when it is put on the next line, Locoscript must be able to spot the end of the last word".

"Hold it! Hold it!" interrupted Julie. "This is just parrot talk that Eddie has taught you. Let's just make sure you understand this. If you have a line of text that reads 'The boy stood on the burning' and there are five character positions left in the line, what happens when you put in 'deck'?"

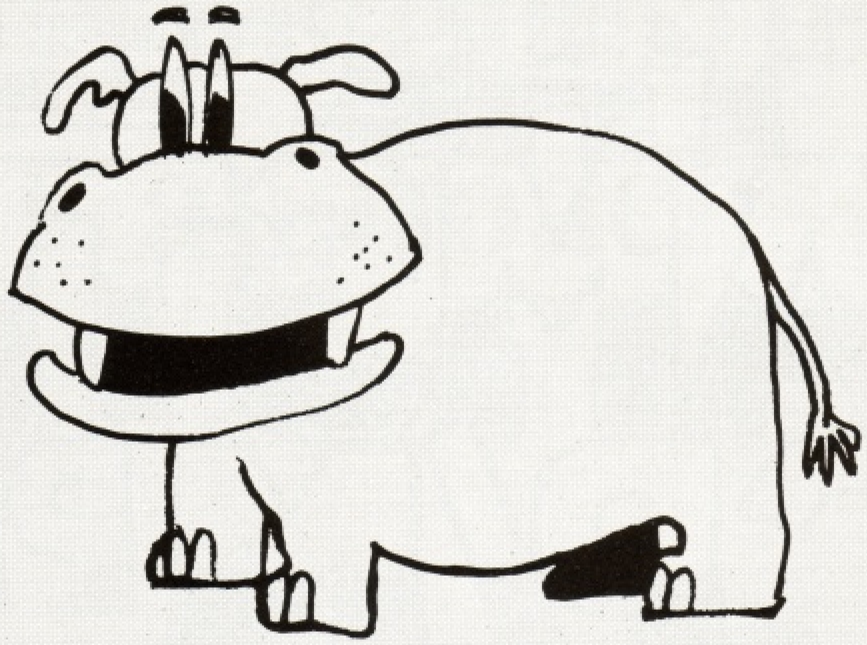
"There are four characters in the word deck and five unused character positions . . . nothing! It doesn't get wrapped".

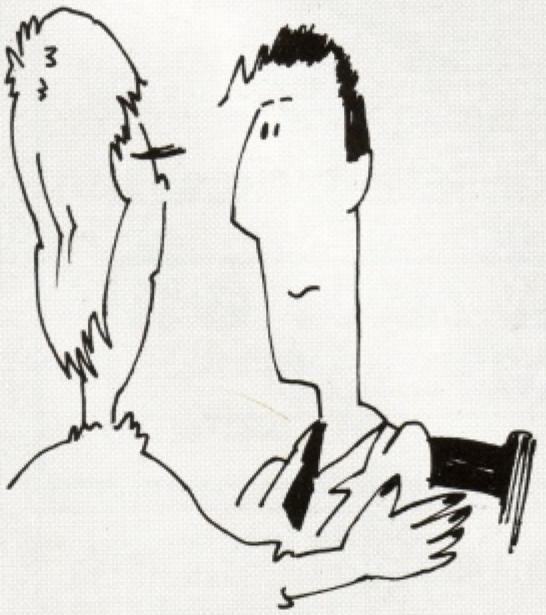
"Okay, but you haven't counted the space between the words. The line end 'burning' space 'deck' space.

"That brings it up to six. It ought to wrap", said Pete, confused. "Ah, but spaces and carriage returns on the end of the line don't count, because they are non-printing characters. The first character that would actually put ink on the paper causes the wrap and gets put on the next line. If you were to put a full stop on the end of 'deck' the word needs to be wrapped".

"Okay, I think I understand that, but how do we know where to break the line off and wrap the next word?" asked Eddie.

"Well, there are certain characters that are considered as word endings and the most important of these are spaces. A collection of characters finishing with a space is a word".





"Well that's straightforward", said Pete. "I shouldn't have too much trouble tomorrow".

"Oh, but it doesn't finish there", warned Julie. "One of the other characters used as a word end is the minus sign which is used as a hyphen. A word would be chopped where the hyphen appears".

"Ah, the dreaded hyphenation. I know that a hyphen is treated as 'it's okay to split the word here'."

"Yes, but there's more to hyphenation than meets the eye. If you were typing in a range of numbers you might want to include a hyphen between two figures or, in another situation, be using the minus sign as a minus sign. For example, books 1-2 or 5-6=-1. If either of these were to appear in the text near the end of a line, they would normally be chopped into two as a hyphenated word, with the second part put on to the line below. This isn't always what the user had in mind. So to get round this there is a special hyphen, called a hard hyphen, that can be put into the text".

"That's one of those options on the F5 menu, isn't it? And there are soft hyphens as well, aren't there?"

"Yes, soft hyphens are slightly different, as they are treated more like a code than a printable character. They should be used in long words at the position the word would be hyphenated if it were split in two. A good example is Hippopotamus. A soft hyphen inserted after the 'o' in Hippo wouldn't be printed unless Hippopotamus was at the end of a line. In which case we pop in the hyphen after Hippo and split the word, putting potamus on to the next line. And it's possible to choose to show soft hyphens using 'Show Codes' on the F1 menu or leave them invisible. That only leaves us with spaces to talk about".

"Spaces? What else is there to know about them?"

"You've got your normal spaces", Julie put down the ketchup to count them off on her fingers. "You've got your hard spaces and you've got your . . ." she waited for Pete to finish the statement.

"Boggy spaces!"

Ignoring her awkward companion she went on. "Soft spaces. Now, you know how a normal space works – it is treated as a suitable place to break a line so that it can be wrapped. A hard space effectively glues two words together with a space in between them. This is particularly useful for such things as initials and titles. For example you don't want 'Mr' and then 'Jones' on the next line. A user can put in a hard space by pressing Set (+) and the space bar.

"If you put a soft space in the text, it works just like a soft hyphen, as a suitable place to break the line, except that unlike a soft hyphen, when the line is split no hyphen is printed. Soft spaces are useful in lists of items that aren't separated by spaces. For example 'hyphens,soft/hard/normal,spaces, soft/hard/normal' is treated as one long word. A soft space, put in after each comma and each slash, (using clear (-) and space), make it easier to find a place to split the list and avoid putting the whole thing on a line on its own. Well, I think that's about it. Any questions?"

"No", said Pete. "Except, where do soft Hippos fit into this?" Julie glared at Pete then picked up the tomato ketchup and squirted it up his nose.

● *NB. The Editor would like to point out that references to nuclear fallout are in dubious taste, but were left in as being relevant to the story line. Also Pete and Julie are fictitious characters and able to endure tomato ketchup up their nose. Please do not try this yourself.*

ABC

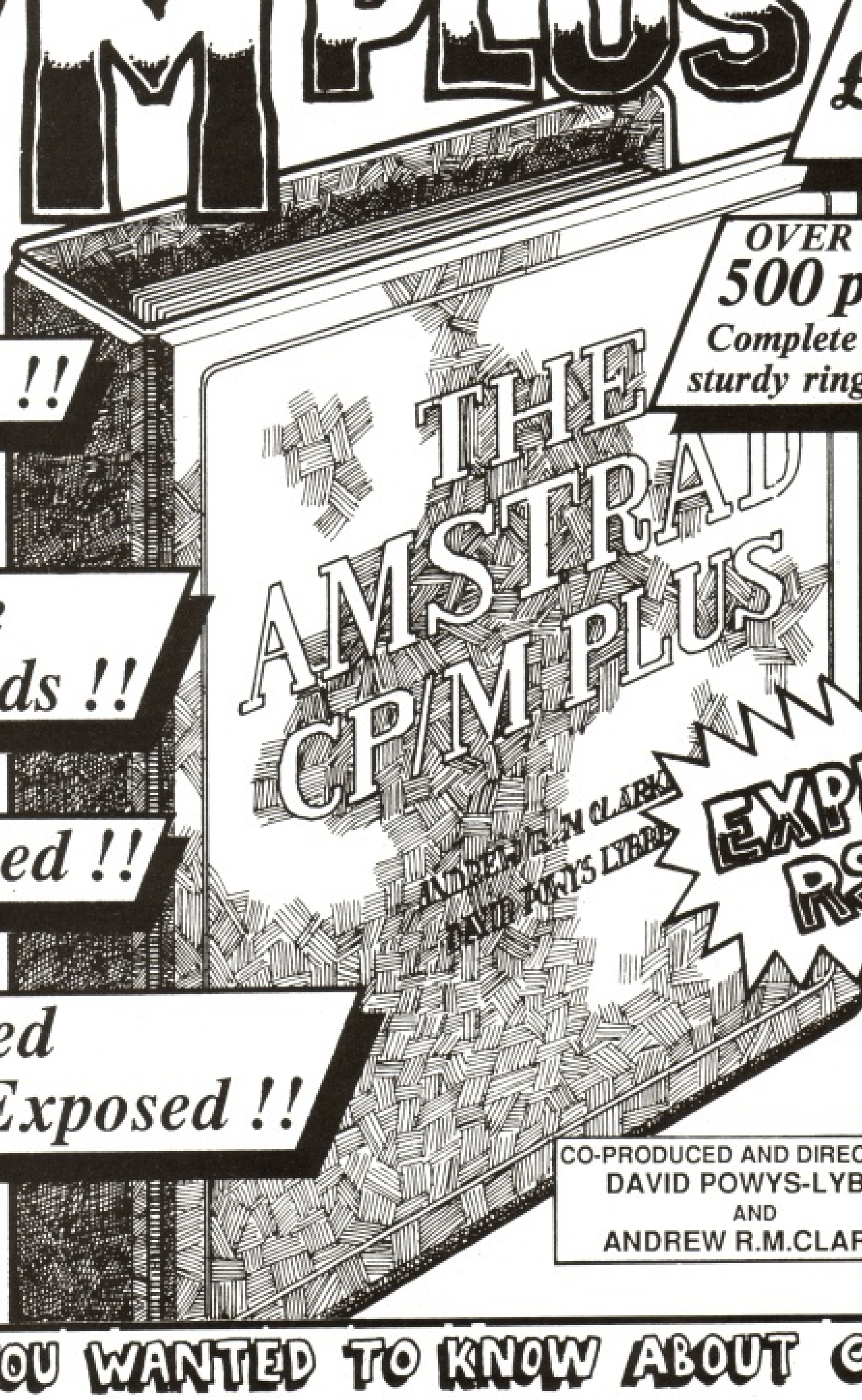
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ABC PROFILE

A diagnostic approach

In the June issue we followed the progress of a family practitioner who wanted to keep track of his patients using a computer. Fortunately, the doctor had a pretty good idea of what he expected the database to achieve, so now he moves on to the tricky bit – finding the tool for the job. Chris Laing examines the problem and comes up with some ideas.

Last month we looked at the problem facing Dr Edwards when implementing a medical record program on his PCW8256. Essentially his requirement is to store 7000 records containing general information (name, address and so on) as well as historic information about several tests and injections.

The first step when considering a database application, is to decide which database program is going to be the most appropriate. Now, this isn't always an easy task because there are databases and then there are databases . . .

The number of records to be held is not a limiting factor, as almost all database programs have record capacities defined by available disc space rather than by a smaller fixed maximum. Also, the number of fields in each record is small, so again this is not an issue, though it might have been had the number of fields exceeded 20 or so.

For this application the information to be stored is very straightforward – there is no overriding feature that must be available within the database, for example automatic record numbering.

The selection of the program must, therefore, be based on a combination of ease of defining the application and ease of operation. The latter is by far the most important – the definition or design of the database should only need to happen once whereas resultant program is going to be in daily use, probably by someone who is unfamiliar with computers.

The available treatments

Now let's consider the options available to us. There is a wide range varying both in price and capability. At the lower end we have Microfile (AKA Flexifile) while at the top of the tree sits dBaseII.

Also at the lower end of the price range there are several programs which are best described as card indexing systems. These systems are ideal simply maintaining a name and address lists or the like, but they simply don't have the facilities for extracting and sorting records on the basis of multiple criteria, that is where a record will be selected only if a number of criteria are met, rather than only one. Cardbox is a classic example of this genre.

Sensible options would include Microfile, Cambase, Sage Database, Delta 1.25 and dBaseII. Microfile can be quickly eliminated, because although it has the features to handle all the data as required, it is unsuited to the inexperienced user, with numerous levels of menu required before a selection can be performed and a printed report obtained.

Cambase will again perform all the sorting necessary and also has a feature for setting up what are defined as processes – a predefined list of operations that can be run simply by calling up the process name. In this case a process could be defined which selected all the women currently due for a cervical smear and generated a list on the printer – this facility is particularly useful for an inexperienced operator.

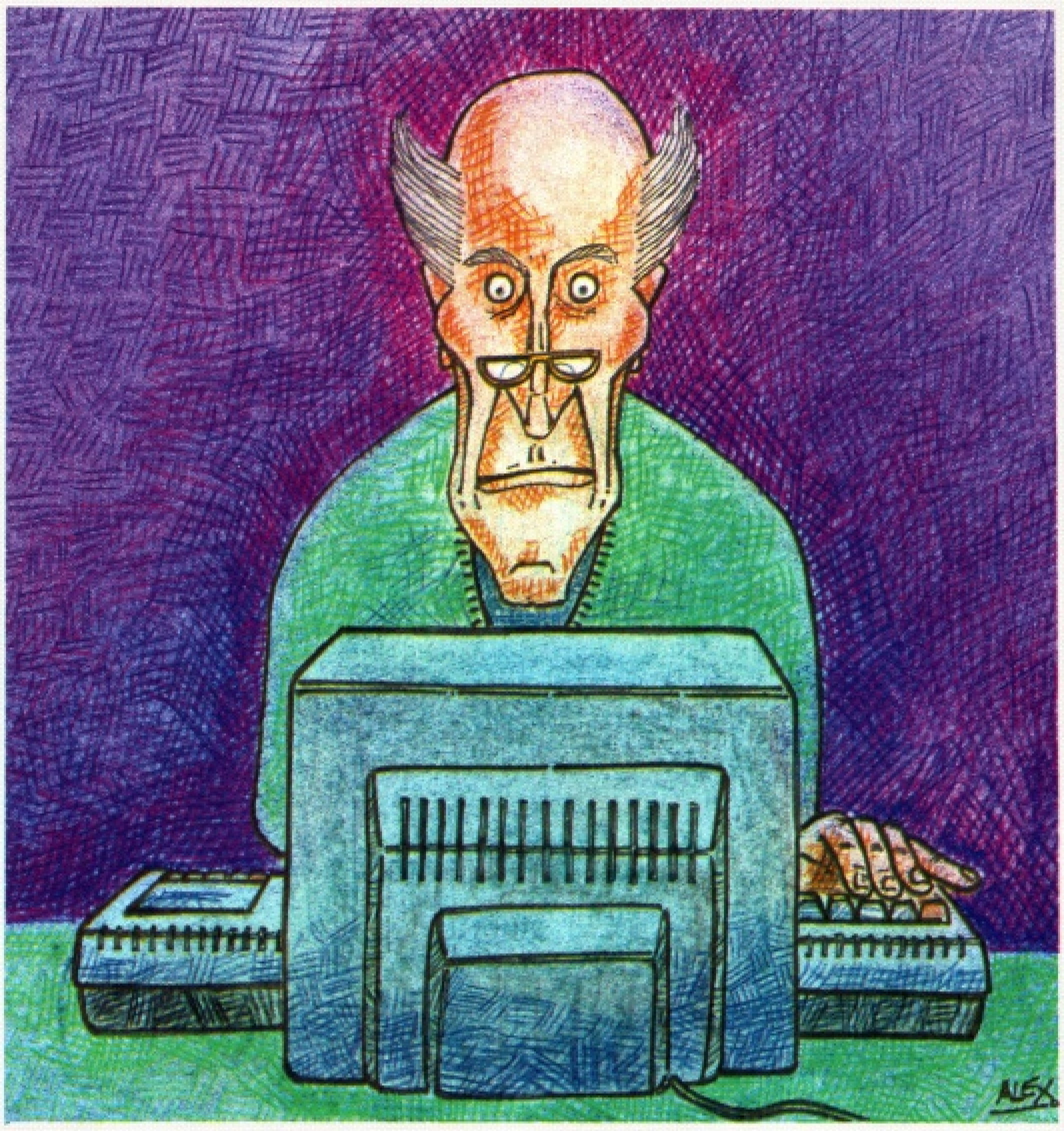
The Sage database is very much a programmer's database that has, without doubt, the most comprehensible entry of searching and printing of records. However it is not as simple from an operator's point of view because these selection lines cannot be saved and would have to be typed in every time a sort was required, allowing too much scope for error.

Delta 1.25 is somewhat more sophisticated than the program we have already considered, since it is intended as a tool for designing a dedicated information system.

A dedicated system is an application that can run, seemingly, independently of the definition or designing section of the database. The operator can, therefore, be blissfully unaware of the sweat and tears that have gone into the design, and simply get on with the job of using the thing. The catch is that Delta is not the easiest of systems to come to terms with, although as Dr Edwards is obviously familiar with computers, this is unlikely to be a problem.

dBaseII – the Grandaddy of all database systems – is also a system design tool, although it has many more extensive features than are required here. Its complexity will be more of a hindrance than a help. The price of dBaseII also puts it in a league of its own, although there appear to be some stirrings in the world of Ashton Tate that may bring it within the reach of we lesser mortals.

Overall, Delta would seem to be the best choice, on the grounds of its



(standby for a cliche) user-friendliness and versatility. Watch out, though, for Condor which is a new-release from Caxton – the specification suggests that it may be well suited to this kind of purpose.

Problem diagnosis

Let us now consider the practicalities of the system the doctor wants. There is somewhat over 700k of space on a double density disc and the requirement is for approximately 7000 records. Simple maths would suggest that as long as we can keep the characters required for each record below 100, all the data can be stored on a single disc.

Unfortunately, neither life or databases are quite that simple. There is an overhead of information that the database program stores in each record in order to keep track of what's going on – typically this amounts to about 50 characters per record. So the bad news is that the information ain't gonna fit on a single disc.

A system with the information split across two discs is quite workable provided that the sections are split logically – for example, surnames beginning with A-M on one disc and those beginning with N-Z on another. This is possible on a system where new records are not being added as a frequent everyday operation but rather as an occasional necessity. In Dr Edwards' case, someone has the unenvious task of typing in the information for all his current patients, but once this has been done the turnover of records is going to be small.

Effectively an input routine could be run at the end of each week (or month) to add new patients and to remove those no longer required. The datafile would then be resorted to ensure that the right patients are held on the correct disc.

The field layouts are very straightforward, except for those holding the dates of the last cervical smear, last tetanus injection and the last blood pressure test. In order to reduce these to a four character field (which is an excellent idea), some careful thought is required.

The fundamental requirement is to be able to search for someone whose last test date is before a date supplied by the operator. In order to simplify the extraction of records it would be preferable if this could be a straightforward mathematical test. Obviously, a numeric field will have to be used to represent the date, but what is not quite so obvious is the way that the date should be represented. A four digit figure must be used, with the year forming the first two digits and the month the second two.

To explain why the year must appear before the month consider the following:

0483 – April 83
1183 – November 83
0285 – February 85

Now if this is sorted into numerical order it will appear as:

0285 – February 85
0483 – April 83
1183 – November 83

Notice how we haven't achieved a list of dates in date order. But the year-month approach will appear so:

8304 – April 83
8311 – November 83
8502 – February 85

Bingo! Of course, the input format now becomes a little strange but a process can be easily written that reverses the two sets of digits to make the input more logical.

One further field is worth mentioning, the disease code field. If this is made an alpha field rather than a numeric field then a maximum of 26 disease codes are possible with no increase in the space required. The codes are entered in this field up to a maximum of 10, which should be sufficient for all but the most persistent hypochondriac, the whole field is then searched for the occurrence of a letter when searching for a particular disease code.

Dr Edwards' particular concern of a cervical smear would require a sort to be made on a basis that relied on one of these disease codes, which would signify that a woman was excluded from the test – for example following a hysterectomy. The overall search criteria would include sex, the non-occurence of this disease code, an age range and a comparison of the date of the last smear. Similar search criteria could be defined for tetanus injections and blood pressure tests as well as future applications not, as yet, decided.

A report format will have to be defined to specify what information from the record actually needs to be printed out when a patient qualifies for the selection. Typically this would be name, address and date of the last smear.

Of course greater levels of sophistication could be included in the system so that a standard letter, inviting the patient to make an appointment, together with an address label are printed out automatically – don't try and do it all at once though, as you'll have your work cut out as it is.

Well that's my diagnosis and prescription, together with a few notes to aid your convalescence. All that remains to be said is "Get well soon".

ABC

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Punch WEEKLY 65p
March 28, 1984

"...What you all need is BrainStorm, a remarkably intelligent notion from Caxton Software...The principle behind the program is so obvious that one wonders why it hasn't been thought of before. It is this: when you start thinking about something which is eventually going to be structured and ordered, you initially think in random jumps. Unconnected ideas flash into the brain...

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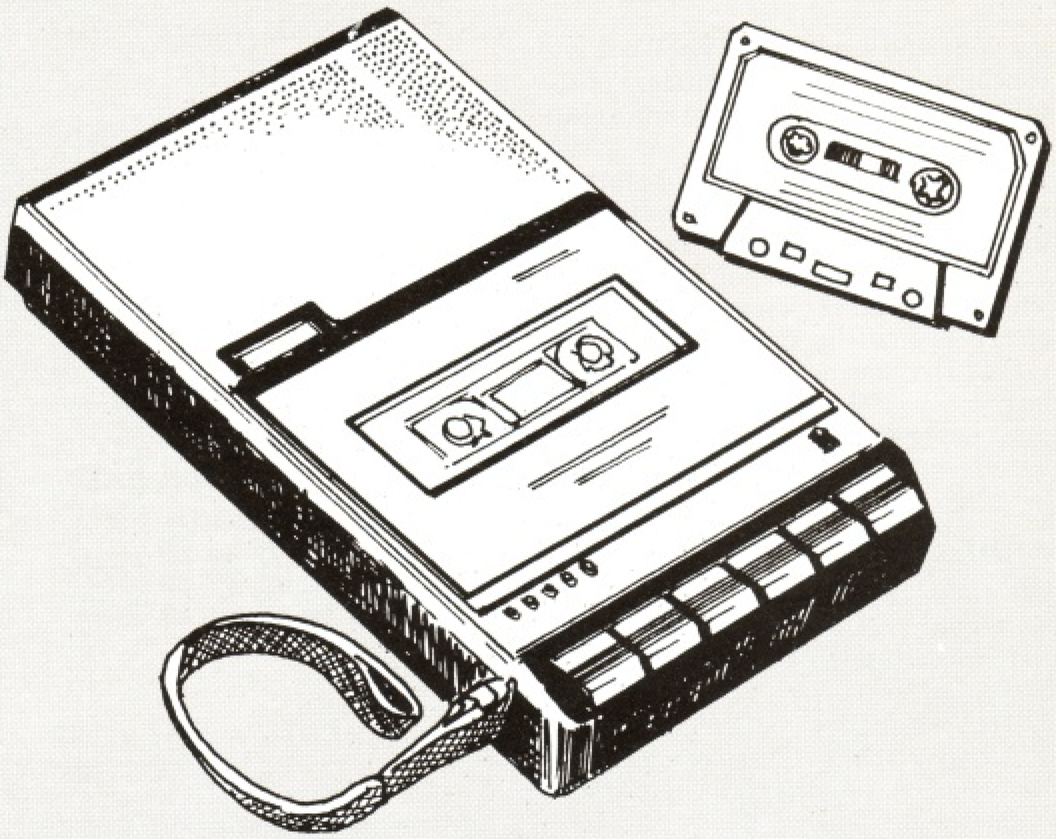
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The Ideas Processor

ABC REVIEW



Listen while you learn

The Reel Time series of audio tutors has assumed a major role in acquainting computer novices with the complexities of CP/M hardware and software. Alex Grimble plugs himself into his cheapo walkman and sets off to learn a new, much needed, skill.

Once you've invested £70 or so in the NewWord word processing package and unwrapped the parcel with trembling fingers, you're confronted with a large manual and a disc.

Even if you already have experience with word processing – perhaps via Locoscript – getting to grips with all the commands, facilities and options available in NewWord is rather daunting. Of course, being a rational human being, you expected to spend a while learning how to operate the software. But many solitary hours lie ahead as you pore through the manual working out what's what and where it should go in order to get the best out of this powerful package.

Head-Line Communications, realising that becoming familiar with complicated software packages can be a difficult task, has come up with a series of cassette-based audio tutors to assist the uninitiated in learning about new packages. The Reel Time audio tutor packages are already available for Locoscript, Multiplan and Supercalc2, as well as CP/M and Basic.

Are you sitting comfortably?

The NewWord tutor package arrives with a fold-out card containing printed text files which have to be keyed in during the tutorial sessions and two audio cassettes on to which the four sessions have been recorded. A couple of small key overlay stickers are also provided, so that the Alt and Exit keys on the Joyce may be upgraded for full newWord compatibility!

Two sides of the accompanying leaflet are devoted to a tick-off checklist of equipment needed before settling down to listen to your taped teacher, and once everything has been assembled on a convenient desk the first side of the course can be loaded into a cassette recorder and the tuition begins. The first task to undertake is the formatting of a blank disc and the creation of a working copy of the NewWord master disc.

Reel Time's tape tutor is male, and was probably picked for his vocal combination of clarity of diction and non-patronising attitude. Alternatively, it might well be the voice of a handy Headline Communications staffer – no matter. Although pupils unused to learning from audio tape may feel a little foolish to begin with, they should soon settle into the way of doing things, following the prompts and starting and stopping the tape as they go along under the guidance of the friendly but firm voice.

Each side of the two cassettes contains one chunk of the course on offer. Each session begins with turning on the

machine and loading up NewWord and concludes with a quick summary of the topics that have been covered and a clean exit from the word processor – tidy working is encouraged from the start. As each new command or facility is introduced, the voice pauses to allow keyboard input to be made and describes what is happening on screen. At the start of the course the pupil is advised to rewind the tape and repeat the last few instructions if the outcome of a keyboard manoeuvre doesn't tally with the expected result.

Don't be shy

Lesson one begins by explaining how to get the best out of the taped lesson. The listener is advised not to feel self-conscious while receiving instruction, and the "Stop the tape" signal – a beep – is played so that the voice can be halted while longish exercises are completed.

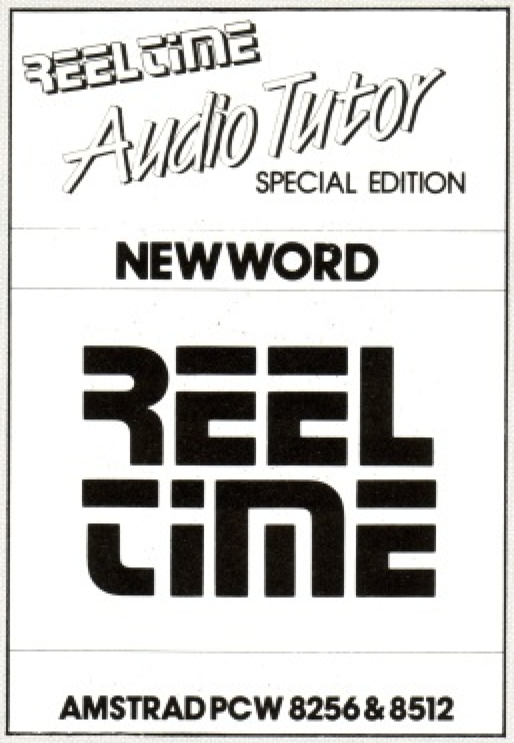
The pupil is told about the Help facility provided by NewWord. Once the Help level has been reset to the minimum, it's on to opening a file with a brief explanation of filenames and the use of the three letter identifier. The format of an empty NewWord page is explained, insert mode is toggled on and off and then the user is asked to key in an example file from a printed sheet.

The basic cursor control keys are demonstrated and their effect explained. Paragraphs are then made from the wodge of text that has been input and rebuilt with the Ctrl B (format) command. The user is asked to add his or her initials to the file, then save and reload it as a practical exercise which also serves to prove that the computer really does keep a copy of the exact file being worked on and the whole thing isn't really a con.

Into print

Once the user has achieved some basic understanding of keying into files, it's time to move on to side two which introduces the printer, explains the Joyce printer menu and the implications of changes made in the printer status line. After the printer has been configured, the novice NewWord user gets to print out text for the very first time, using the file saved to disc in the previous session. When the printer has done its stuff, the first piece of work with a serious application begins. A dummy letter has to be keyed in from the printed example, and NewWord's double key commands are introduced and explained.

A tour round the NewWord menu system follows, including the extension menus, and the novice is shown how to seek on screen help for particular commands. Dot commands, which sit on screen on a line of their own, butted up to the left margin and concluded with their

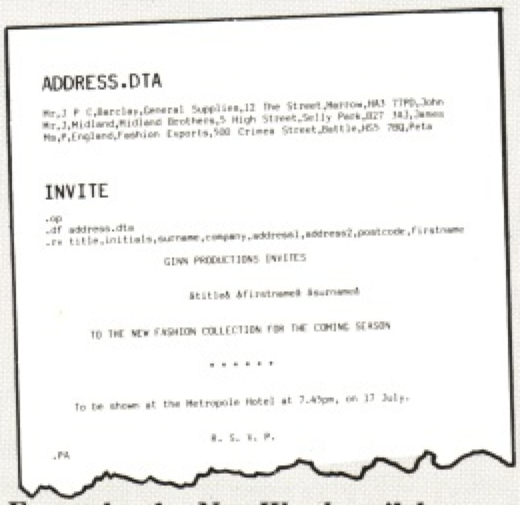


very own RETURN are introduced. The concept of text scrolling is demonstrated and deletion of single characters, words and lines is explained, as well as the Undo (Ctrl U) command before the idea of doing things with blocks of text is raised.

Block power

The power conveyed by block operations is explained, once a quick demonstration of block marking has been set up with the user's cooperation. Block save and read is covered and demonstrated, along with the concept of using standard files containing often used phrases, layouts or paragraphs to assemble documents.

The third session introduces some new layouts to the user, who should by this stage have become reasonably familiar with the basics and be generally unfrightened by NewWord. Margin changes are effected under the reassuring guidance of the taped voice – which reminds the user to make sure that changes to the left margin might affect the workings of dot commands. Paragraph indents, achieved by resetting margins and rebuilding text, are shown



ADDRESS.DTA

Mr,J P C,Barclay,General Supplies,12 The Street,Harlow,HA3 7TPD,John
Mr,J,Midland,Midland Brothers,5 High Street,Selly Park,B27 3AJ,James
Ms,P,England,Fashion Exports,500 Crimea Street,Battle,HS5 7BQ,Peta

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Example of a NewWord mailshot

using the dummy letter that was keyed into a file during lesson two.

A little time is spent on marking blocks for special attention by the printer – which can be asked to print in bold, double strike, underline and overprint mode – and some special commands to do with cursor movement in a large document are touched upon. Find and replace operations are demonstrated, using the letter file on screen and, finally, forcing a pagethrow with .PA is shown in action.

Mail merging

By the time the NewWord initiate has completed the first three lessons, he or she should have picked up a firm working knowledge of most of the opening menu options offered by NewWord, and could well go away and process words quite merrily.

The final lesson deals with merge printing, revealing how a demo mailshot letter can be keyed into a mailshot file in such a way as to allow the same letter to be printed out a number of times, with name and address fields being supplied from the keyboard against prompts.

Once the concept of variables planted in the text has been explained and shown to work, a full mail merge application using an address file keyed in by the user is explained and operated. Then the reasoning behind protecting such valuable documents as address files is given – the user is led by the hand to protect the newly created address list and is shown that, indeed, it cannot be edited when it is saved and called back on screen.

By way of a finale – just in case the pupil is left with ever-decreasing disc space – the way to unprotect files is given and an orderly exit made from NewWord for the last time in the tutorial.

Conclusion

This package should prove invaluable to anyone who has just acquired NewWord and the accompanying fat manual. Each side of the tape should take a couple of hours to work through, and at the end of the course a sound working knowledge of word processing with NewWord should have been imparted. Naturally, the full range of options and facilities can't possibly be covered in what is a comparatively short course, but for £10 the equivalent of a day's professional tuition can be acquired for use (and re-use if there are problems) in the privacy of your own home.

The extra investment represented by this taped tutorial, over and above the initial cost of NewWord itself, is minimal and the package has much to offer anyone starting out with NewWord.

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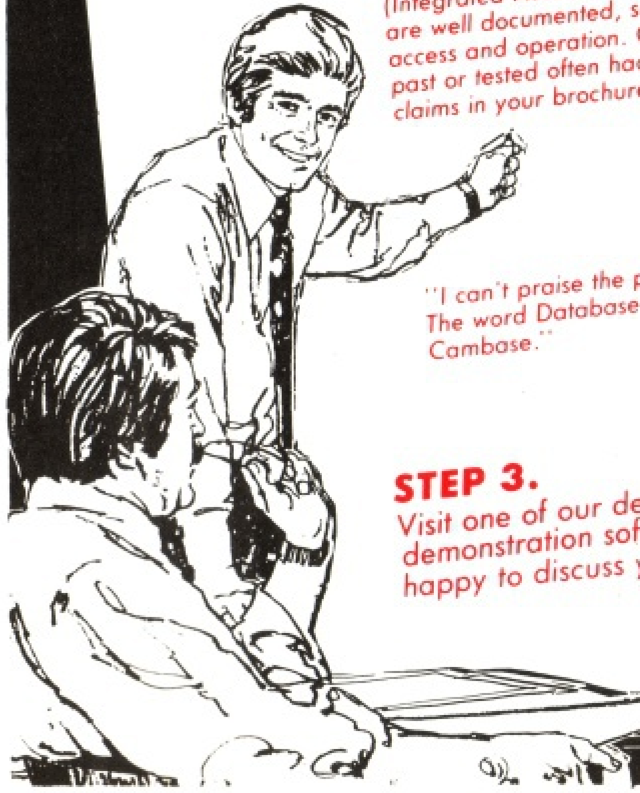
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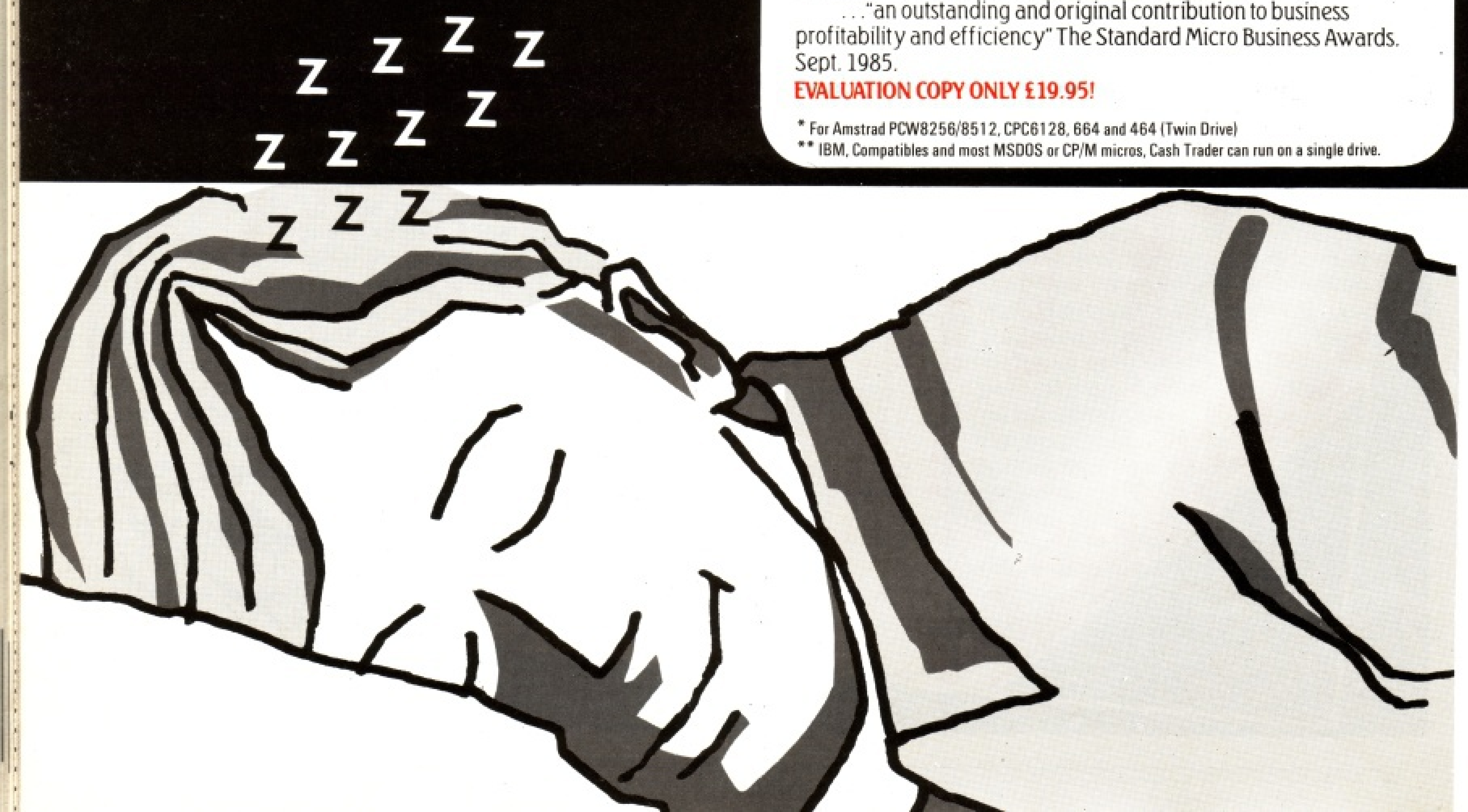
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ABC

PROGRAMMING

Using GSX with machine code

Right then – pin your peepers back, this is the third and final part of our sprawling adventure through graphics country.

To start with, here are the rest of the calling structures which I could not fit in last month. Firstly the Escape (device specific) instructions which mostly relate to the text cursor and are self explanatory. The possible sequences are shown in Figure 1.

All escape functions share the same basic structure which we will call:

TYPE D:
Input:
contrl(1) – opcode = 5
contrl(2) – 0
contrl(6) – ID
Output:
contrl (3) – 0
Some of the escape functions in the above list also require or supply additional parameters.

TYPE E:
Input, as type d plus:
intin(1) – row number (–1)
intin(2) – column number (–1)

TYPE F:
Input, as type d plus:
contrl(4) – number of characters in text string
intin – text string in Ascii decimal equivalent

TYPE G:
Output, as type d plus:
intout(1) – row number (–1)
intout(2) – column number (–1)

TYPE H:
Input, as type d plus:
ptsin(1) – x-coordinate of location to place cursor
ptsin(2) – y-coordinate of location to place cursor

TYPE I:
Output, as type d plus:
intout(1) – number of addressable rows on screen
intout(2) – number of addressable column on screen

That completes the parameter specifications for the escape functions. The rest are on the facing page.

Sorry all these tables make boring reading, but you now have all the information you require. GSX is a complex subject which could perhaps be better covered in a book (and someday some mad fool may try). It may require some extrapolation to find the exact data you require but its all here, somewhere! The rest is up to you.

ID	Key type	
1	Inquire addressable character cells	i
2	Exit graphics mode	d
3	Enter graphics mode	d
4	Cursor up	d
5	Cursor down	d
6	Cursor right	d
7	Cursor left	d
8	Home cursor	d
9	Erase to end of screen	d
10	Erase to end of line	d
11	Direct cursor address	e
12	Output cursor addressable text	f
13	Reverse video on	d
14	Reverse video off	d
15	Inquire current cursor address	g
16	Return tablet status	x
17	Generate hardcopy	x
18	Place graphic cursor	h
19	Remove graphic cursor	d

Note: x = not supported in Amstrad supplied drivers.

Figure 1

Write text
Input:
contrl(1) = 8
contrl(2) = number of vertices = 1
contrl(4) = no. of chars in string
intin = char string in Ascii decimal
ptsin(1) – x coord of start point in NDC's
ptsin(2) – y coord of start point
Output:
contrl(3) = 0
Writes text in a specified position, note that the x,y coordinate refers to the base of the character itself, not the character cell.

Generalised drawing primitive
Input:
contrl(1) – opcode = 11
contrl(2) – no of vertices = 2
contrl(6) – 1 (box primitive ID)
ptsin(1) – x-coordinate of lower left-hand of bar
ptsin(2) – y-coordinate of lower left-hand of bar
ptsin(3) – x-coordinate of upper right-hand corner of bar
ptsin(4) – y-coordinate of upper right-hand corner of bar
Output:
contrl(3) – 0
This will outline a box on the screen, or fill the box in current fill style on the printer.

Character heights
Setting the height of characters and markers only has an effect when using the printer drivers. Both use similar structures.
Input:
contrl(1) – opcode, 12 = character height, 19 = marker height
contrl(2) – no of vertices = 1
ptsin(1) – 0
ptsin(2) – requested height in NDC's
Output: (character)
contrl(3) – no of vertices = 2
ptsout(1) – actual character width selected in device units.
ptsout(2) – actual character height selected.
ptsout(3) – character cell width in NDC's
ptsout(4) – character cell height in NDC's
Output: (marker)
contrl(3) – no of vertices = 1
ptsout(1) – 0
ptsout(2) – marker height selected.
The minimum and maximum character and marker sizes can be obtained from the ptsout array when opening a workstation (see last month's article).

Set text direction (printer only)
Input:
contrl(1) – opcode = 13
contrl(2) – 0
intin(1) – requested angle of rotation (in tenths of a degree 0 – 3600)
intin(2) – run of angle = cos (angle) * 100 (0-100)
intin(3) – rise of angle = sin (angle) * 100 (0-100)
Output:
contrl(3) – 0
intout(1) – angle of rotation selected in tenths of a degree (0-3600)
At a practical level only four directions are allowed (0, 90, 180 and 270 degrees) so that intin(2-3) are not required when calling this function, just set intin(1) to 0, 900, 1800 or 2700.

Colours
Setting and reading of colours use similar parameters:
Specify colour index value
Input:
contrl(1) – opcode = 14
contrl(2) – 0
intin(1) – colour index
intin(2) – Red colour intensity
intin(3) – Green colour intensity
intin(4) – Blue colour intensity
Output:
contrl(3) – 0

Return colour representation
Input:
contrl(1) – opcode = 26
contrl(2) – 0
intin(1) – requested colour index
intin(2) – set or realised flag 0 = set (return colour index requested)
1 = realised (return colour index realised, that is the actual colours selected if the requested index was out of range).
Output:
contrl(3) – 0
intout(1) – colour index
intout(2) – red intensity
intout(3) – green intensity
intout(4) – blue intensity

The colour index is basically the ink number, 0 = background colour, >1 = foreground colour(s). Each colour intensity can be one of three levels 0=off, 1=half-on, 501=full on. On the Joyce any level of colour other than black is considered white!

Using the machine code

And now the moment the poor Mallardless programmers have been waiting for, (fanfare) DA-DAHHHHH!, a chance to do something in assembler.

You will need the following files:
A word processor or text editor which can create Ascii text files, Wordstar, Maxam, Newword, RPED (supplied with the 8256/8512) will do nicely, even ED if you are desperate.
GENGRAF.COM
MAC.COM
HEXCOM.COM
GSX.SYS
ASSIGN.SYS
any .PRL files that your ASSIGN.SYS file refers to.

SHAPES (Listing 1) is a simple piece of assembler code to draw patterns with GSX. The patterns can be anything you like from letters, as in this program, to window designs for double glazing salespersons.

All that is required is the coordinates of the points to join using the standard GSX NDC's range of 0-32767 in both the x and y axis. The actual shapes are just stored as data words, the first word being the number of xy pairs that follow.

The program is a very simple one, very much a run once and get the hell out type of thing. This means there is a complete lack of error trapping, sloppy programming and pointers left in all sorts of unresolved states ... the sort of thing you get in most magazine programming articles.

The main body of the program, between the opening and the closing of

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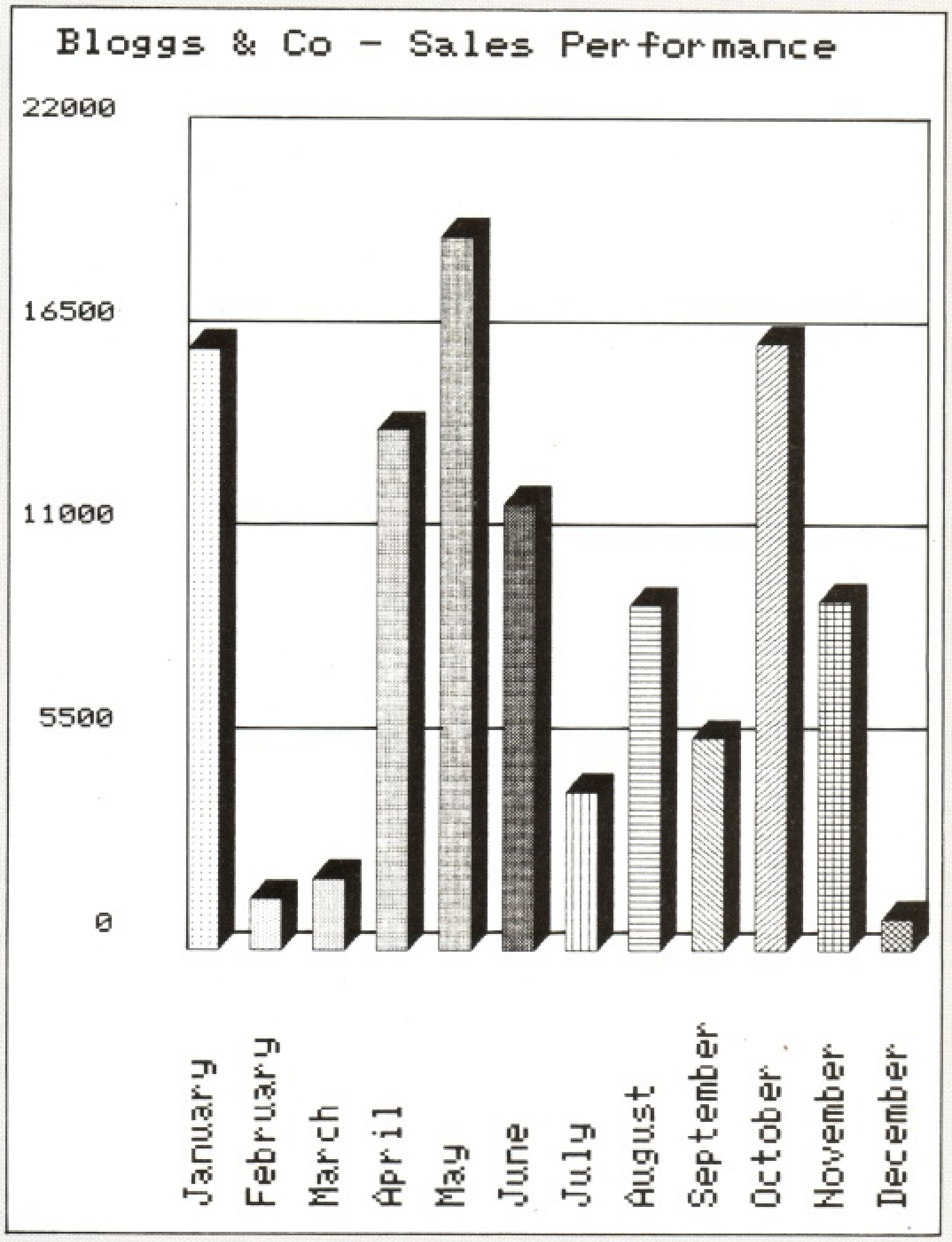
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```
 ;GSX demonstration     Ken Clark / C-Side

;        org     100h
bdos     equ     5
gsx      equ     115
;
;Clear control array and open workstation
;
start    call    clrcon
         lxi     h,1
         shld    contrl
         lxi     h,10
         shld    contrl+6
         call    gdos
;
;Initialise colours and draw shapes
;
         call    stdcol
         lxi     h,box
         call    shape     ;draw box
         lxi     h,gee
         call    shape     ;draw G
         lxi     h,ess
         call    shape     ;draw S
         lxi     h,exe
         call    shape     ;draw X
;
;Wait for [RETURN] to be pressed..
;
press    mvi     c,1
         call    bdos
         cpi     13
         jnz     press
;
;....and then close workstation
         call    clrcon
         lxi     h,2
         shld    contrl
         call    gdos
         rst     0         ;bye, bye!
;
;subroutine to clear control array
;
clrcon   mvi     b,18
         lxi     h,contrl
clrcom   mvi     m,0
         inx     h
         dcr     b
         jnz     clrcom
         ret
;
;standard call gdos entry
;
gdos     mvi     c,gsx
         lxi     d,parblok
         call    bdos
         ret
;
;subroutine to set up standard colours
;
stdcol   call    clrcon
         lxi     h,14
         shld    contrl
         lxi     h,fground
         shld    parblok+2 ;INTIN
         call    gdos
         lxi     h,bground
         shld    parblok+2
         call    gdos
         ret


;
shape    xchg
         call    clrcon
         ldax    d
         mov     l,a       ;get # of pairs
```




```
         mvi     h,0
         shld    contrl+2
         xchg
         inx     h         ;inc address
         inx     h
         shld    parblok+4
         lxi     h,6       ;GSX polyline
         shld    contrl
         call    gdos      ;draw it
         ret
;
fground dw1,501,501,0

gee      dw24,9984,22528,9984,25600, 7424,30720,2816,30720,256, 25600, 256
         dw10240,2816,5120,7424,5120, 8320,7168,9984,5120,9984, 20480,5376
         dw20480,5376,15360,7424,15360, 7424,11264,6912,10240,3328, 10240,2816
         dw11264,2816,24576,3328,25600, 6912,25600,7424,24576,7424, 22528,9984,22528
;
ess      dw29,21248,22528,21248,25600, 18688,30720,14080,30720, 11520,25600
         dw11520,20480,14080,15360, 18176,15360,18688,14336, 18688,11264,18176
         dw10240,14592,10240,14080, 11264,14080,13312,11520, 13312,11520,10240
         dw14080,5120,18688,5120,21248, 10240,21248,15360,18688, 20480,14592
         dw20480,14080,21504,14080, 24576,14592,25600,18176, 25600,18688,24576
         dw18688,22528,21248,22528
;
exe      dw13,32512,25600,29952,30720, 27648,24576,25344,30720, 22784,25600
         dw25344,18432,22784,10240, 25344,5120,27392,12288,29440,5120,32512
         dw 10240,29952,18432,32512,25600
```

```
bground dw0,0,0,501
;
parblok dwcontrl,intin,ptsin,intout, ptsout
contrl  dw0,0,0,0,0,0
intout  ds90;45 words
intin   dw01,1,1,1,1,1,1,0,0,1
ptsin   ds128;64 words
ptsout  ds24;12 words
;
box     dw5,0,0,32767,0,32767,32767,0, 32767,0,0
;
```

the workstation, loads the HL register pair with the address of the shape data block and calls the subroutine SHAPE. This subroutine loads HL with the number of x-y pairs and places it in contrl(2), the shape data address is then incremented to the start of the real coordinate data and this address stored in the contrl block word for ptsin (parblok+4).

All that is required now is to set the opcode (6=draw a polyline), call the GDOS and the pattern is drawn. Once you have got the program working you can experiment with your own shapes.

Readers with more than a passing knowledge of machine code will recognise that the assembler code does not look much like Z80. There's a good reason for this – it isn't. As much as people moan the assemblers supplied (free, gratis and for nothing) with the 6128 and the Joyce sisters (MAC and RMAC) are 8080 assemblers and so I have used 8080 code.

The reason for this is simple. Every Amstrad CP/M Plus computer owner has a copy and so you don't need an exotic or trendy assembler to try the program. Flash readers can easily convert the program to Z80 for their pet compiler if they want to. They might even save a couple of bytes if they are lucky.

Compiling

Type in the program listing into your Ascii text editor (non-document mode in Newword/Wordstar, prog mode in Protext) and save it with a filetype of .ASM (SHAPES.ASM for example) onto the disc that contains the files mentioned previously. If you are not already in CP/M Plus, boot up now. Type:

MAC SHAPES [RETURN]

and the code will be assembled producing a code file (.HEX), a symbol table (.SYM) file and a printer (.PRN) file. If errors are flagged you will have to go back and check for errors in your source code file (SHAPES.ASM). If no errors are reported type:

HEXCOM SHAPES [RETURN]

and the .HEX file will be converted to a directly executable command (.COM) file. The last step is to add the GSX loader to your .COM file. To do this type:

GENGRAF SHAPES [RETURN]

Your program is now ready to run (assuming your ASSIGN.SYS file is correct), just type:

SHAPES [RETURN]

and the acronym GSX should appear on the screen (unless you have been flash and diverted it to the printer). Once you have admired the picture for long enough press [RETURN] and you will be returned to CP/M.

That's all folks!

I think I've covered most of GSX in the last few articles. There are other sources of information about GSX for those who require more. I believe a book is in the the process of preparation (might even be on the streets by the time you read this).

Word has just reached me on the wind-blown steppes of eastern Essex that some public domain goodies may be about to surface.

I'll keep you posted.

ABC

ABC ADVICE

Spreading the load

There's more to having a spreadsheet than just knowing how to fly the thing. If you want to understand the way your business finance works then David Laing offers some valuable advice on how you should put your spreadsheet to good use.

The advent of the personal or home computer has put in the hands of the individual and small business the means of easily keeping track of personal expenditure; doing the book-keeping of a business and providing the information required by HM Customs and Excise for VAT purposes and by HM Inspector of Taxes. It is from this a small step to planning your own or your business finances using one of the spreadsheet programs which are available.

What is financial planning?

This article is going to deal with the two most useful types of plan – the profit forecast and the cash flow forecast. Both will be discussed with particular reference to a small business, but the principles would apply equally to an individual. Jargon will be kept to a minimum, but there are some definitions which should be made so that the article is comprehensible.

Profit forecast is a forecast of income and expenditure which relates to a given period of time, usually a year, and without reference to the dates of the actual cash coming in (cash inflow) or being paid out (cash outflow) and will also take account of non-cash items such as depreciation, or provision for future expenditure. No account is taken of capital expenditure.

A cash-flow forecast is the actual cash inflow and outflow during the period under review. It will take no account of the non-cash items, but will take in purchase and sales of assets during the period.

It is very important to grasp the difference between these two kinds of forecast, and many people take a long time to understand the difference between them; their separate uses will become more apparent as the article progresses.

Profit forecast

In the first instance a profit forecast is a single column of figures showing sales for the year, the cost of the goods relating to those sales, and the expenses of the business in making those sales. In its simplest form this could be:

Here is the profit forecast for A Trader for the year to December 31, 1986:

	£
Sales	30,000
Cost of goods sold	15,000
Wages	5,000
Other costs	5,000
Total Costs	25,000
Profit	5,000

Figure 1

A very simple example, and sufficient perhaps if the sales are of equal value each month of the year, and all the costs are incurred evenly throughout the year. After all, in those circumstances it gives all the information required and the owner can look forward to earning a taxable profit of £416.67 each month.

Unfortunately there are very few businesses in which the pattern is as straightforward as this, either the sales grow evenly throughout the year, or the sales are seasonal. In these circumstances when sales or costs fluctuate during a year for whatever reason it becomes necessary to break down the sales and expenses into quarterly or preferably

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Digital Research Inc & Amstrad Consumer Electronics plc

Up till now Amstrad users have had very little reliable information available to them about their CP/M Plus operating system. But now with the publication of this, the official CP/M Plus Handbook, users will have a complete and accurate guide to operating and programming the *Amstrad CPC6128* and *PCW8256*. The book, which is spiral bound for ease of use, contains 500 pages of practical, clearly presented information. Based on Digital Research's original documentation for their CP/M Plus operating system (previously unavailable to the public) the handbook is divided into three sections: Users' Guide, Systems Guide and Programmers' Guide.

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monthly figures.

Here it is appropriate to consider two kinds of expense – variable expenses which vary directly or are influenced to a substantial degree by the volume of sales; fixed expenses are those which continue day after day whether or not there are any sales.

Examples of variable expenses are the actual purchase price of goods sold, packaging materials, power consumed in the production of goods sold, wages incurred in the manufacture of goods sold; fixed costs are such items as rent and rates, depreciation of assets and office wages.

Figure II is an example of a more detailed profit forecast, this time for B Trader for the six months to December 31, 1986. His business is seasonal with sales peaking in November.

This shows quite a variation in profit from month to month during the period. From a negative profit in the first month to a substantial profit in the peak trading month, followed by a break-even in December. These variations could come as a shock unless the sort of forecast shown above is undertaken.

	Jul £	Aug £	Sep £	Oct £	Nov £	Dec £	Half Year £
Sales	4,000	5,000	5,000	6,000	10,000	5,000	35,000
Variable costs							
Goods sold	1,000	1,250	1,250	1,500	2,500	1,250	8,750
Packing							
Material	100	125	125	150	250	125	875
Wages	500	625	625	750	1,250	625	4,375
Total	1,600	2,000	2,000	2,400	4,000	2,000	14,000
Gross profit	2,400	3,000	3,000	3,600	6,000	3,000	21,000
Fixed costs							
Rent	500	500	500	500	500	500	3,000
Heat and light	400	400	400	500	600	700	3,000
Wages	1,500	1,500	1,500	1,500	1,500	1,500	9,000
Depreciation	300	300	300	300	300	300	1,800
Total	2,700	2,700	2,700	2,800	2,900	3,000	16,800
Net profit/ (loss)	(300)	300	300	800	3,100	–	4,200

Figure II: B. Trader Profit Forecast

Again it should be stressed that this profit forecast reflects sales and expenditure which relate to the period and does not indicate the actual date of the receipt or payment of cash. This sort of forecast expanded to cover at least a year would be useful to support an application to the bank for a loan to expand the business or to provide additional facilities. It helps to establish the creditworthiness of the enterprise. To establish whether a loan is actually required, and the amount of the loan, we need a cash flow forecast.

Cash Receipts	Jul £	Aug £	Sep £	Oct £	Nov £	Dec £
Cash sales	2,000	2,500	2,500	3,000	5,000	2,500
Credit sales		2,000	2,500	2,500	3,000	5,000
Total inflow	2,000	4,500	5,000	5,500	8,000	7,500
Cash Payments						
Goods for sale		1,000	1,250	1,250	1,500	2,500
Wages						
Casual	400	500	500	600	1,000	500
Fixed	1,200	1,200	1,200	1,200	1,200	1,200
PAYE/NI		400	425	425	450	550
Packing						
Materials		350			525	
Rent			1,500			1,500
Heat and light			1,200			1,800
Corporation tax			1,500			
New van						4,500
	1,600	3,450	7,575	3,475	4,675	12,550
Net cash flow						
Month	400	1,050	–2,575	2,025	3,325	–825
Cumulative	400	1,450	–1,125	900	4,225	–825

Figure III: B. Trader Cash Flow Forecast

Cash flow forecast

Almost by definition a cash flow forecast which only produces total figures for the year is useless since monthly swings from a deficiency to a surplus will not be revealed. A forecast prepared monthly should ensure that sufficient cash resources are available for week-to-week trading.

Looking at the profit figures for B Trader, these are considered in more detail for the purpose of preparing a cash-flow forecast.

If we assume that 50 per cent of all sales are cash and 50 per cent are on credit and that credit sales are always paid at the end of the month following the month of sale, then the cash inflow from sales is as in Figure III.

The figures are different already, and if some assumptions are made about the timing of expenditure the remainder of the cash forecast can be made.

Here are the assumptions. Goods for sale are purchased as required and paid for at the end of the month following purchase; 20 per cent of wages refer to PAYE/NI and are paid to the Inland Revenue the following month; packaging materials are purchased for three months at a time at the beginning of the quarter and paid for in the second month of the

quarter; rent is paid quarterly on the usual quarter days; heating and lighting are paid quarterly in September and December; unfortunately there is a tax payment due on September 30 of £1,500 in respect of profitable trading in the previous year; delivery is expected in December of a new van at a cost of £6,000, a trade-in value of £1,500 has been agreed.

The difference between the inflow and the outflow is the net cash flow =-£825. If at the beginning of July there was £500 in the bank then the balances at the end of each month will be as shown at the bottom of Figure III.

As long as the bank will allow overdraft facilities of at least £625 then the business can continue to trade without any problems.

So far the emphasis has been on the mechanics of constructing the two types of forecast. Setting up a model on a spreadsheet such as Multiplan can be easily undertaken, particularly when mathematical relationships can be established between the various figures.

In the profit forecast for B Trader the value of goods sold is 25 per cent of sales, and packing materials 10 per cent of the value of goods sold. More sophistication can be achieved if there are a number of sales lines each having a different gross profit margin. The advantages of working these figures on a computer with the aid of a spreadsheet is the ease with which the results of a change in any of the figures can be reflected in the final profit line or in the cash flow. Also once the model is set up the mathematics are certain to be correct. Perhaps the bank manager will also be impressed that this degree of sophistication is being used.

On the larger spreadsheets it would be possible to have both profit and cash flow forecasts on the one sheet and, by using the relationship commands, once a figure is altered in the profit forecast the cashflow forecast is updated.

Preparing forecasts in itself can lead to improved profitability by drawing to the owner's attention to areas of high spending for low return and bringing to light the impact of high and low profit lines, the effect of improving manufacturing techniques perhaps with the aid of additional assets.

However, having made a forecast it is no good sitting back and assuming that your business will perform in accordance. The most important thing now is to compare the actual sales and expenditure, actual inflow and outflow, against the forecast and identify the reasons for the difference.

One of the strengths of a spreadsheet is that changes can be quickly and easily incorporated into the model. It should be possible to update and extend the forecast on a regular basis as a result of experience.

By continuing to monitor actual against forecast experience of forecasting will improve, and use of these figures will hopefully lead to an increasing profitability for B Trader.

ABC

ABC SURVEY

Question time

Yes it's another survey. It isn't that we are bureaucratic idiots who can think of nothing better to do with our time but ask silly questions, but we really need to learn as much about your interests as we can. So don't hang around, cut out the page (or photocopy it if you prefer) and fill in the gaps. Please send your completed form to:

ABC Survey, Amstrad Business Computing, 169 Kings Road, Brentwood, Essex CM14 4EF.

Time for you to help us to help you. The easy bit is to read the form – the difficult bit is to find an envelope, a stamp and send it. Please make the effort.

The personal bits

1. Age ____________
2. Gender ____________
3. County ____________

4. Which Amstrad Computer do you own?

☐ 464
☐ 664
☐ 6128
☐ 8256
☐ 8512

5. Which other computers do you own?

☐ Spectrum
☐ BBC Micro
☐ Commodore 64/128
☐ IBM lookalike
☐ Another CP/M computer
☐ Other machine ____________
____

6. Did you consider buying any other computer before you bought an Amstrad?

Type ____________

If you are using your computer in business then:

7. How many people does your company employ?

☐ Just you
☐ 2-6
☐ 6-15
☐ 16-30
☐ Over 30

8. Is there a person within your business who understands computing in a commercial environment?

☐ Yes
☐ No

9. What area in your business do you feel it is important to computerise?

☐ Financial accounting
☐ Credit control
☐ Stock control
☐ Correspondence
☐ Cost and management accounting

10. Please tick one of the following which you think most accurately describes your computer ability?

☐ I'm baffled
☐ I don't really understand what I am doing but I cope so long as I follow the instructions
☐ I can drive the software I use but can do little else
☐ I know and use some of the CP/M functions (like PIP) but would like to learn more
☐ I fully understand most operations and can write a CP/M application over breakfast

From each of these two questions indicate what you believe to be the answer.

11. A boot disc is:

☐ A disc which has to be used to store CP/M+ programs
☐ A disc with the computer operating system on it
☐ A data disc
☐ Don't know

12. To rename a program called DOG.COM to CAT. COM using PIP which of these commands is valid?
- ☐ A:DOG.COM=A:CAT.COM
- ☐ A:CAT.COM=A:DOG.COM
- ☐ RENAME A:DOG.COM AS A:CAT.COM

13. Which single application was most important to you when you bought your computer? Tick one.
- ☐ Wordprocessing
- ☐ Accounting
- ☐ Information storage on a computer database
- ☐ Communications
- ☐ Modelling with spreadsheets
- ☐ Games
- ☐ Programming
- ☐ One-upmanship

14. Ignoring your current interest please tick number the boxes in order of the subjects which interest you the most (1 most interesting).
- ☐ Accounting
- ☐ Games
- ☐ Databases
- ☐ Spreadsheets
- ☐ Communications
- ☐ Exploring free access bulletin boards
- ☐ Exploring free CP/M software
- ☐ Experimenting with languages

15. If you are interested in languages which one would you like to have a go at?
- ☐ Pascal
- ☐ Basic
- ☐ C
- ☐ Assembly
- ☐ Cobol
- ☐ French

16. If you are interested in communications in which way would you use the facility?
- ☐ For business communications and information
- ☐ Only as a hobby

17. Which other magazines do you buy regularly?
- ☐ Computing with the Amstrad
- ☐ Amtix
- ☐ Crash
- ☐ Zzap!
- ☐ Amstrad Action
- ☐ Personal Computer World
- ☐ Practical Computing
- ☐ Which Micro
- ☐ Popular Computing Weekly
- ☐ Your Computer
- ☐ No others
- ☐ Any other ____________

18. How many people read your copy of Amstrad User/ABC?

____

19. Which topics do you want to see more of? Rate each topic on a scale of one to 10.
- ☐ News
- ☐ Accounting
- ☐ Communications
- ☐ CP/M in general (GSX, public domain etc)
- ☐ Software reviews
- ☐ Hardware reviews
- ☐ Features on the Amstrad in use in other organisations
- ☐ Training on/with Amstrads
- ☐ Book reviews
- ☐ Business features
- ☐ Readers letters
- ☐ Problem Topics
- ☐ Games

Teach-ins on:
- ☐ CP/M
- ☐ Using Mallard Basic
- ☐ Programming in other languages
- ☐ Business accounting
- ☐ Using spreadsheets
- ☐ Using wordprocessors
- ☐ Using communications
- ☐ Using databases
- ☐ Using GSX

20. ACU readers on a scale of 1 to 10 indicate if you type in listings (1 not at all interested)
☐

21. If you are interested, which areas of programming would you like covered?
- ☐ Business
- ☐ Games
- ☐ Utilities
- ☐ CP/M
- ☐ Other languages
- ☐ Learning Basic
- ☐ Getting inside your Amstrad

22. Have you ever responded to adverts in ACU/ABC?
- ☐ Yes
- ☐ No

23. How much a month do you spend on software?
- ☐ £0-£15
- ☐ £15-£25
- ☐ £25-£50
- ☐ Over £50

24. Additional equipment. Tick that which you have.
- ☐ A disc drive
- ☐ Second drive 3in
- ☐ Second drive 5in
- ☐ RS232 interface
- ☐ Printer (other than supplied)
- ☐ Modem
- ☐ Hard disc
- ☐ None

25. Number the items you would like to acquire in order of preference.
- ☐ A disc drive
- ☐ Second drive 3in
- ☐ Second drive 5in
- ☐ RS232 interface
- ☐ Modem
- ☐ Printer
- ☐ Light pen
- ☐ Hard disc

26. Printers. If you buy one will it be . . .
- ☐ A dot matrix under £200
- ☐ Dot matrix over £200
- ☐ Daisywheel
- ☐ Laser

27. Roughly how much time do you spend in front of your micro each week?
- ☐ Less than two hours
- ☐ 2-5 hours
- ☐ 5-10 hours
- ☐ 20 hours or more

28. Which piece of software spends most time loaded in your machine?

____

29. In four words or less what do you dislike about ACU/ABC?

____

ABC

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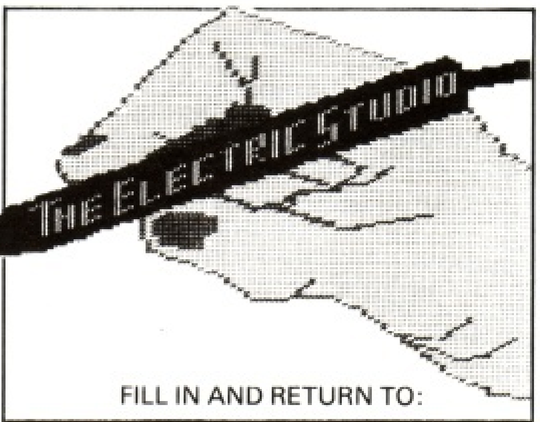
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Debit my Access/Visa Card No:

....

Expiry Date ....

Signature ....



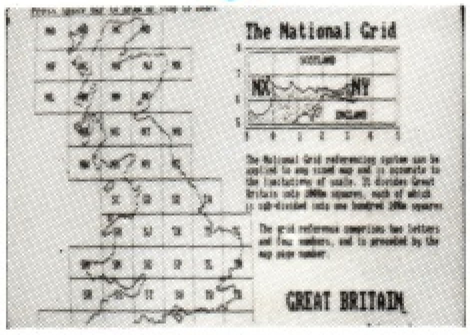
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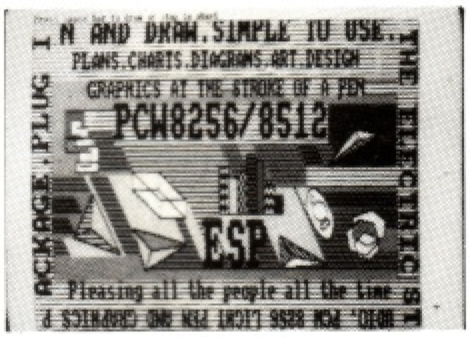
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- ★ GSX DRIVER included on disc for installing the Light Pen to use with DR DRAW.

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THE ELECTRIC STUDIO

ABC
COMMS

What are bulletin board systems good for?

Since computer communications are of such interest to computer users, ABC is pleased to announce its comms corner. Roy Jones' article deals with bulletin boards but later features will examine such topics as business systems, commercial databases, comms software, networking and such delights as electronic mail. You had better go and find yourself an interface.

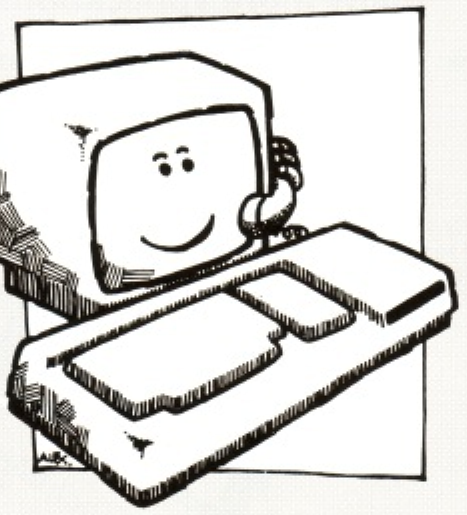
With the growing use of CP/M and MSDOS on affordably priced micros the demand for cheap software has never been so great. A consequence of these lower prices is that dealers no longer have sufficient profit margins to provide the support a new micro user needs. Bulletin board systems (BBSs) can fill both these needs.

Many of the better BBSs have hundreds of free public domain programs which can be downloaded for just the price of a phone call. In the area of technical support, a message left on one of these boards will often produce several offers of help.

A bulletin board system is basically a computer which is connected to a modem – a device which allows transmission of digital signals over telephone voice lines – which is in turn connected to the telephone network. The computer will use some special software which allows it to run as an unattended system allowing callers to be connected automatically and have access to the facilities provided by it.

These facilities may consist of a database, where information can be looked up, a messaging scheme where one can leave and receive messages, and possibly an area containing software which can be downloaded – transferred over the phone line to the caller.

Commercial systems usually concentrate on message and database facilities.



Apart from the commercial systems which are mainly intended for business users, there are many non-commercial, free or very low cost systems which provide some very useful facilities. In the UK there are probably 200 to 300 privately run non-commercial bulletin board systems, although this is insignificant compared with the number in the USA.

Bulletin board systems are usually run by hobbyists and enthusiasts, though some are run by computer clubs and user groups, with a few others run by commercial concerns and public bodies as part of their customer services or for advertising product lines.

Modems and communications programs

To contact one of these BBSs you will need to have access to a modem which can handle the required speed, and a communications program running on your computer.

The modem must be connected to the computer via the serial (RS232) port (a must-be-found-and-bought-bit for all Amstrads).

For those with an Amstrad Joyce machine you already have the basic software required. On side 1 of your system disc there's a utility called MAIL232.COM (yes there is, it's hidden. Do a 'DIRS' and it will show itself).

Mail lets you configure your system to set up the correct protocols by a series of easy to use menus. The software is pretty basic but can be used for file transfer in hex or Ascii between machines directly connected or over the phone via a modem. For computer to computer chatting – rather than direct file transfer – your computer will need to be in terminal mode. In this mode Mail operates as a glass teletype (like a paper teletype only harder). It becomes a terminal of the machine you are communicating with.

Of course, the chances are that if you have bought an interface and modem you

may already have some commercial software. If not, and you are considering splashing out on the necessary kit, hold on for our package review coming soon.

Before you can log on to any system you must know the protocols it is using (the speed, data format and so on), otherwise you will have a hard time trying to understand the gibberish that comes back. The data format most commonly used is eight data bits, no parity and one stop bit. You will find that's the default setting for most software.

How to talk to a bulletin board

Several computer magazines publish lists of phone numbers of bulletin board systems. Sometimes these may not be very up to date and you may find that a few of the numbers no longer have any active system on them. Often these lists will also contain additional information about the board, such as baud rate, protocol, hours available for access and so on.

The baud rate will usually be either 300/300 or 1200/75 – these are also known as V21 and V23 respectively. In V21 mode signals are transmitted to and from the BBS at the same speed, 300 baud – about 35 to 40 characters per second.

V23 is a peculiarly British mode where signals are transmitted to the BBS at 75 baud and back from the BBS at 1200 baud. There are a few BBSs which run at 1200/1200 and 2400/2400 but the high cost of modems for these speeds inhibits their widespread use. Also the 2400/2400 mode is not always very reliable on our UK phone system.

What will you find?

Having managed to successfully log on, what you will find varies somewhat depending on the particular board but they mostly have the same general layout. First you will be asked for your name and if you have not logged on to the system before it will ask you to pick a password. You should pick one you can easily remember, as the password you give will be stored along with your name in the user file and if you don't remember it next time you log on, the system will not let you in.

Once through the introductory material you will probably end up at the main menu. The usual arrangement of menus will be something like Figure 1.

This is the basic layout. Only one file and message section is shown but in practice there may be several. Some BBSs such as Fido systems call the area where files for downloading are stored in a file section whereas other systems may call this a download area. The commands available for the file area will usually be those shown in Figure 1 plus a few others, such as:

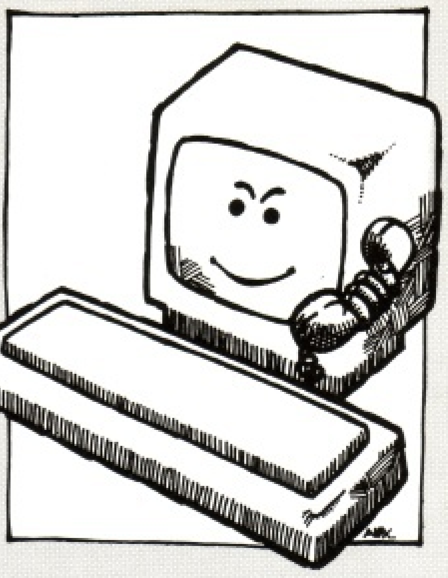
Upload	Send a file to the BBS.
Download	Transfer a file from the BBS to the caller.
Type	Display a text file on the screen.
Display or List	Display a list of the files available for download – the Fido system uses Files for this.
Locate	Find a particular file by name.
Area	Change to a different file area – often BBSs will have a section for different types of files such as CP/M, MSDOS and so on.

When you choose the download option you may be asked what type of file transfer protocol to use. For text files you can use Ascii but for program files you will need a comms program like Modem 7 or MEX which supports XMODEM protocol or similar. With some systems, if you ask to transfer a program file as Ascii it will be turned into hex format – control and other characters will be transferred as their Hexadecimal equivalent. For example, control Z character would be converted to the Ascii characters 1A. Program files transferred in this way can be converted back to their original form by use of a program such as CP/M's Load command.

The message area

Apart from file areas there will be one or more message areas where messages can be left or read. Some systems automatically check the messages for any new ones addressed to you when you log on. Others ask if you want to check for mail when you enter a message area.

The menu options for this area may vary a bit between different systems but tend to follow the same pattern. The menu choices usually include "Enter a message". When this option is chosen you will be asked who is the message for. It may be to a specific individual, in which case enter the person's name, or to any one who cares to read it, in which case you would enter something like "all".



The next question usually asks if this is a private message. If you answer Y to this then only the addressee will be able to read the message. Subject ? is the next question asked – many new users make a mistake with this one and try to start the message at this point. The subject entry should just be one or two words which describe the content of the message such as Amstrad comms, gardening or whatever. When entering messages a number of editing commands – insert line, delete line, edit line and so on – will be available.

The usual way to finish with a message is to just enter a carriage return at the start of a new line. You may then Save, Edit or Abort the message. Read allows you to read the messages (only the non-private ones) and the message to be read has to be specified by a number.

Locate or Search facilities are often provided to enable the messages to be searched for certain subjects or wording you can specify. Summary allows just the message headers to be read, so that the numbers of messages which may be of interest can be noted.

As for replies, some systems have very sophisticated message handling facilities. These may allow replies to be appended to messages so that when the message header is read it may also have a note saying "See also 56" which is a reply to the message.

Other menu options

Apart from the above actions there will

```
                        Call number
                             :
                    Boards Identifying message
                             :
                    Request For name & Password
                             :
            +-----------------[ Main Menu ]-----------------+
            :                       :                       :
  +-Message Sections-+       Special Functions        +--Files
Sections-+
  :      :      :      :                              :     :     :
:
Enter Read Locate Check for mail                  Upload Download
Type Display
```

Figure 1: What you usually see when you log on

probably be many others depending on the particular system and how it has been set up. ? or H will usually give a list of the commands available from any menu, and G – for goodbye – is available from most menus.

When the G option is chosen most systems will ask if you would like to leave a private message for the sysop. If you answer Y a message can be entered in the normal way.

Courtesy to sysops

The time, effort and expense of running a bulletin board, if done on a commercial basis, would probably require a considerable annual fee plus a "time on" charge. Yet many of these systems are completely free and others make only a token charge or provide the service as part of club or user group services.

Unlike some of the commercial systems, bulletin board operators get no portion of the callers' phone charges or government grants or anything similar. They are usually run at considerable personal expense by hobbyists and enthusiasts. In fact they probably deserve some sort of grant as they generate considerable business for hardware and software suppliers plus lots of extra revenue for BT.

Most sysops go out of their way to make things easy for callers, the majority of difficulties are caused by not bothering to read the help notices or instructions provided. Before leaving complaining messages to the sysop, who probably has too many to read anyway, read the help files and try to solve the problem yourself. Remember also that most sysops have other full time jobs to do, as well as looking after the BBS, so don't get annoyed if your message takes a few days to get answered.

More information

You can get information on some 1,400 discs of public domain communications and other programs by sending a stamped A5 size sae plus two loose 13p stamps to: The Public Domain Software Interest Group, 138 Holtye Road, East Grinstead, Sussex RH19 3EA.

BBS to call: PDSL FIDO 0342-315636 (300/300), SOFTNET 1 TBBS 0895 52685, SOFTNET 2 TBBS 0895 420164. (Both 300/300 and 1200/75).

A simplified glossary of BBS, communications and computer terms

Ascii American Standard Code for Information Interchange. For our purposes any printable character – thought of as those with hex value of between 20 and 126.

Auto answer Usually refers to a type of modem or BBS which will automatically answer incoming calls.

Auto baud rate selection The ability of a BBS or modem to adjust itself to handle incoming calls at varying baud rates.

Area A section on a BBS set aside to hold some particular type of item, usually files or messages.

Baud rate The rate of data transfer. 300 baud is 300 bits per second or about 30 to 40 characters – letters or numbers – per second.

BBS Bulletin Board System, from it being the electronic version of the familiar wall hung notice board where one could leave or read written messages. Various types of software have been developed to run BBSs.

Block mode Where a preprepared message is entered as a block usually by uploading it as a file.

BSTAM A commercial communications program mainly used for transferring files between different computers wired directly together, not via modems.

Character One byte of information – letters and numbers like a X 3 9 ! are printable characters. Carriage Return, Line feed and so on are non printable or control characters.

Columns Some BBSs ask you how many columns to use. Most CP/M and MSDOS computers can handle 80 but 40 is common on home type machines.

Comms program A program which allows the computer to send data typed in from the keyboard or from disc files to be sent to a communications port (RS232). It also allows data fed into the RS232 to be displayed on the screen or saved as disc files.

Carrier The tone produced by the modem in itself contains no data, but when data is fed to the modem the carrier is modulated or altered in some way. The changes can be detected by the remote modem and the data thereby recovered at the remote end. Hence the carrier is the tone which carries the data – its presence is indicated by the DCD or CD lamp on the modem.

Download Transfer files from the BBS to the caller.
The part of the BBS containing files and programs for download, often just called a files area.

Default The state assumed if no other value or condition is specified.

Fallback Usually in reference to multi speed modems which first attempt to make contact at the fastest speed and if this fails "fall back" to a lower speed to attempt connection.

File area An area on a BBS where a caller will find program or data files which can be viewed or downloaded.

Hayes compatible Conforming to the standards originated by the American Hayes modem company. Such modems respond to a command language which can be

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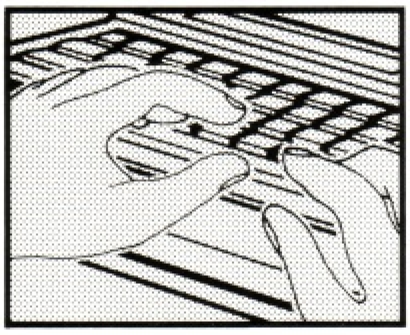
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used to set the modem into certain modes. (See Smart modem.)

Hayes command language A special set of commands which are used to set up the functions of a smart modem.

Indicator lamps Most modems have indicator lamps to show the status of the modem. DCD (data carrier detect) or CD (carrier detect) shows the presence of a carrier signal from the remote modem. DSR (data set ready), shows that the modem has data to send to the computer. The TX and RX lamps light when data is being transmitted (TX) or received (RX). DTR (data terminal ready) shows that the computer is ready to receive data from the modem. OH (off hook) shows that the phone line is active. Some modems may have more or less lamps than this and the labelling may be a bit different but these are the main ones found.

Kermit A public domain communications program available for a very wide range of eight bit and 16 bit micros plus mainframe systems. Can be used for micro to mainframe comms as well as for modem/BBS use.

Kill Delete a message or file. You will only be able to delete messages addressed to you and files can usually only be deleted by the sysop.

Line noise A bad line can cause the same kind of problems to computer communications as it would to voice contact.

Line mode Method of message entry on a BBS where a message is typed in a line at a time. (See block mode.)

Line feed When you first log on to some BBSs you may be asked if your computer needs line feeds. It is safer to answer yes to this – if you answer no and your computer does need them all the text will appear on only one line.

Log (on) *Also* **Sign on** To call up and access a BBS.

Lower case Some BBSs (such as TBBS systems) ask if your terminal (computer) can display lower case (non capital) letters.

Message area Most BBSs have at least one message area – a place where you can leave and read messages.

Message header Messages on a BBS have headers which briefly describe their content. The header will usually consist of the subject (who the message is to), private or public message (who it's from), time and date of origin, whether received or not, message number of any reply on file and so on.

Message number When entering a message area, the number of messages stored will be displayed. This is something like: 43 messages, highest is 82. Notice here that the number of messages does not have to tie in with the highest message number as some of them may have been deleted.

MEX (Modem EXecutive). A fairly recent public domain communications program, easily configurable to suit a variety of CP/M machines.

Modem area A special file area on a BBS containing communications programs and related items.

Modem 7 A very common public domain communications program for CP/M. It is available ready configured for many types of computer or in assembler source code allowing user customisation. Modem 7 is also the basis for a whole series of similar programs for CP/M and MSDOS machines.

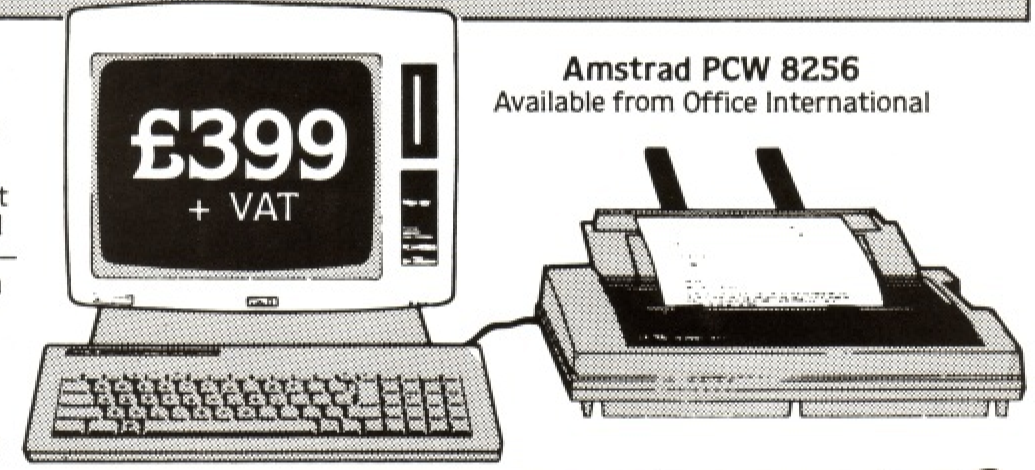
Nulls Very slow display devices can lose characters if they are sent data too soon after the end of a line. Nulls are non-displaying characters sent to give the display device time to catch up. Some BBSs ask how many to send – in most cases 0 is fine but 5 or 6 would be safer.

On line 1. A functioning BBS. 2. Files, messages or facilities available on a BBS for access by a caller.

Protocol The system of conventions used to determine how communications are carried out. To transfer program files between computers a 100 per cent error free communication is needed. Various methods have been developed to do this. The usual one is to break the file to be transmitted into small parts called records (usually 128 bytes). Each record also contains information – a sort of inventory of contents – about what it should contain. The receiving computer can check the inventory for each data block and request it to be retransmitted if the contents did not match the inventory. The most common protocols are XMODEM, MODEM7 and KERMIT. To use any of these protocols you need to have compatible communi-

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cations programs at both ends. *Note.* To transfer program files such as COM or .EXE you have to use one of these protocols.

Public area Part of a bulletin board system to which any caller is given access.

Public domain Usually refers to software which is uncopyrighted or which has been released to the public domain by its author. The difference between public domain and commercial software is that PD material can be freely copied and copies given away. Commercial software usually has very binding restrictions about copies and usage is normally limited to one computer and one to three backups. PD software has no such restrictions – you can give away copies to whoever you like and are encouraged to do so.

Privilege level Most types of BBS software allow the sysop to set the privilege level between various levels. The highest would be Sysop which allows access to the whole system and lowest is usually called Twit – someone assigned this level would only have a very limited access.

Registered user Many bulletin board systems require that you become a registered user to gain full access to all the areas of the board. If the board is run by a club or group, it may be necessary to become a member to gain full access.

Record A block of data, usually 128 characters or bytes.

RX/TX Receive/transmit. Originated from wireless operators using morse code – TX and RX were much quicker to send than the full words.

SIG 1. Special Interest Group, some BBSs have SIG areas for particular types of computer. 2. Software Interest Group.

Smart modem Usually refers to a Hayes compatible modem. A smart modem will usually do things like auto baud rate selection, auto dial, auto answer, stores phone numbers and many other functions. Can be set up by means of commands sent to it by the computer rather than with switches used by dumb modems.

Sysop SYStem OPerator – the person who runs and looks after the BBS.

Tabs During file transfer Tab (control I) characters in a text file may be turned into a number of space characters (20hex) this has the effect of making the file larger after transfer.

Text file 1. A file made up of only printable characters plus carriage returns, line feeds and end of file characters (Control Z). 2. A file which can be displayed on the screen correctly by means of the built in command TYPE available under CP/M and MSDOS.

Twit See privilege level. The lowest level of privilege allowed to a user on a BBS.

Terminal Basically the screen and keyboard. From the early days of computing when the display device/keyboard were separate items from the main computer.

Utilities Programs to perform some routine task like copying files from one disc to another, as opposed to a program which has an end in itself, like a word processor, which would be called an application program.

Upload To send a file to the BBS from the caller.

User file This is a file maintained by the BBS software and contains a list of the users of the board, their passwords and their privilege level.

Whinge A person who leaves trivial complaining messages.

Wrap round Some BBSs – such as Fido automatically continue to the next line when entering messages rather than having to type a return to get to the next line.

X25 A form of file transfer protocol where blocks of data of 1024 bytes are sent rather than the usual 128 byte blocks.

XMODEM A type of file transfer protocol developed by Ward Christianson. Files to be transmitted are sent in blocks of 128 bytes. The block also contains information about its data content. When a block is received it is checked for correct content – if it is correct an acknowledgement signal (ACK) is sent to say "All is well, send the next block". If the content is not OK a NAK signal is sent which says "Did not get it, send again". This method, and variations of it, is used to ensure that data can be transmitted and received more or less 100 per cent error free.

Z!@@%& Rude word uttered by a keen BB user on seeing the quarterly phone bill.

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Exploring the Activision armoury

Simon Rockman went down to Activision and found them prepared to take on the world

Activision must be full of hypochondriacs. They have recently moved from the posh medical surroundings of London's Harley Street for the equally posh surroundings of Pond Street in Hampstead. They are now just outside the Royal Free Hospital, a place with an admirable reputation within the medical profession and a place where you get your car clamped if you leave it in the way.

Hampstead is famous for many things – its view over London, ridiculous house prices and very wealthy denizens. It also has some of the best pubs in North London.

Some time ago Andrew Wright from Activision told me that they were about to make it big on the Amstrad scene. I smiled in polite agreement and thought to myself: "They all say that". After all, the only Activision programs I'd seen up to then were Ghostbusters and Master of the Lamps. These were not exactly state of the art feats of programming.

OK, Activision has some good Commodore 64 and Atari stuff but nothing which had made it to the Arnold. He then showed me very early versions of Rescue on Fractalus and Eidolon and I changed my mind about Activision faster than most synapses could handle.

Behind Jaggi lines

Rescue on Fractalus will probably be the first. This has been converted from the Commodore 64 and Atari by Dalali (who we interviewed last month). You play a spaceman with the task of rescuing fellow pilots from the clutches of the dreaded Jaggis. Your comrades have crashed on a planet surface but they have followed the good spaceman's handbook and stayed with their ships, waiting for their beacon to be sighted so that they can be rescued.

You have to land near enough to the crashed ship for the castaway to see you and run to your craft. This is made more difficult by the Jaggis who will try to shoot you, either from their mountaintop bases or from their flying saucers. You can shoot back, partly to score points but mainly to save your skin.

Rescuing a pilot is simple. Locate the beacon on your scanner, slow down as you approach and try to get closer to the ground. If you try to land when you are too high the ship's computer won't let you. Land close and try to get the crashed craft in view. The pilot will wait until you have turned off the defence systems and then run towards you.

If you turn the systems back on too soon you will kill the man you are supposed to be saving – not the kind of thing which will win you medals. The man trudges up the metal steps of your craft and will knock on the door. It is worth waiting for the knock before opening the hatch. You don't want to let anyone (or anything) in as it wanders around on the planet. When you have collected enough stricken pilots you take them back to the mothership and then fly off to get some more.

The instructions advise you to blast the remnants of the crashed spaceship. This does produce the expected explosion but does not merit any points.

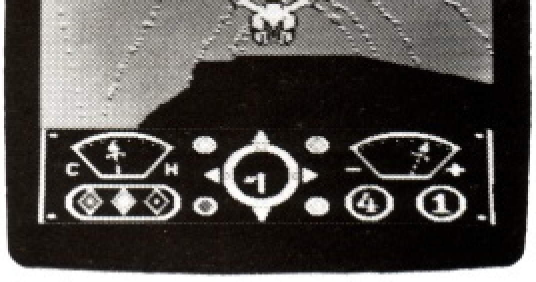
The game as I saw it was finished – it just needed approval from Lucasfilm in America. Lucasfilm is the same company that made the Star Wars films. This is not just a case of rubber stamping – Lucasfilm is one of the best software houses in the world and as the owners to the rights of Fractalus guards its position jealously. Having seen the game, I can't believe it will refuse Activision permission to release Rescue on Fractalus.

In the footsteps of Agon

Eidolon is another Lucasfilm game, and again it is a brilliant and absorbing program. You have wandered into the laboratory of Dr Agon. You find a machine, The Eidolon itself, which looks like H.G. Wells' time machine, made of wood and brass. This is not a device for exploring time but for travel through your own mind.

Luckily we all seem to have a mind which looks the same or else the demonstration would have been a wee bit confusing. You pilot the craft through the tunnels of your mind, finding a collection of monsters, each beautifully animated. Some of the monsters guard jewels which are necessary to help you get from one level to another in the game.

These can be shot but if you miss, the bullets will bounce around the caves until they hit something – usually the Eidolon. The documentation is the usual huge sheet that takes as long to fold back into the box as it does to read. It captures the atmosphere of the game perfectly, describing what you have to do in the form of a diary.



In the caverns of your mind

Eidolon has been converted by PAW, a company which Activision intends to keep so busy that no-one else gets a look in. Unusually the conversion is better than the original.

Whatever next?

Lucasfilm owns the rights to some stunning software. For example, Ballblazer is a 21st century sports game and there is Konois Rift – another fractal based game but this time on a much flatter planet. Lucasfilm has the rights to some Lucasfilm films and the game of the films, including the arcade hit Star Wars. They sold the home computer rights to Parker who then did almost nothing with them, cancelling the Spectrum release after the game was finished.

The French connection

We have seen some French software in earlier issues of *Amstrad User*, and the quality of some of the stuff was stunning. Activision has imported and will be distributing Le 5eme Axe. Now it has been translated you can understand what you are supposed to do. You can even pronounce the English name – The Fifth Axis. The game has been written by Loriciels who have plenty of other goodies up their sleeves, including a football game.

Prognosis

Activision is a very healthy company. There are some big film licencing deals in the pipeline and the international connections make it one of the biggest software houses in the world. It has crept up on unsuspecting Amstrad computer users so don't be surprised if you find an Activision tape in your cassette deck over the next couple of months. ACU

Database proudly presents...

Some of the features of the new Mini Office II

With the word processor you can . . .
★ Select most features by menu or embedded commands. ★ Transfer records from database for personalised circulars. ★ Choose from three methods of display: 20 column (double size characters), 40 column, 80 column. ★ Centre, indent, tab, justify and merge text. ★ Insert, copy, move or delete blocks of text. ★ Select two editing modes: insert or overwrite. ★ Search and replace globally or selectively. ☆ Check typing speed in words per minute. ☆ See on-screen real-time clock, plus word and character count.

With the database you can . . .
★ Select five field types (Alpha, Decimal, Date, Integer, Formula). ★ Perform all arithmetic functions. ★ Search over multiple fields. ★ Mark individual records. ★ Use flexible printout routine. ★ Pass records to the word processor. ☆ Carry out powerful multi-field record sorting.

With the spreadsheet you can . . .
★ Total rows and columns, with easy selection of criteria. ★ Copy formulae either absolutely or relatively. ★ Print out all or part of the spreadsheet. ★ Move directly to a specific location. ★ Select movement of cursor. ☆ Recalculate automatically or manually.

With the label printer you can . . .
★ Design any style of label with the versatile editor. ★ Select label size and sheet format. ★ Read directly from database files.

With the graphics pack you can . . .
★ Enter data directly or take from spreadsheet. ★ Use icon type menus. ☆ Choose pie chart, bar chart or line graph. ★ Display up to three line graphs simultaneously. ★ Display up to three bar charts side by side or stacked. ★ Choose bar charts in either 2D or 3D. ★ Draw compacted or emphasised pie charts. ★ Define your own style of shading. ★ Dump graphs directly to Amstrad or Epson compatible printer.

With the comms pack you can . . .
★ Access MicoLink or Telecom Gold with only two key presses. ★ Select protocols as required. ★ Change modes while on-line. ★ Store text directly to memory or disc. ★ Use one-key 'Stop' command.

With all the modules you can . . .
★ Use the AMX Mouse. ★ Choose foreground and background colour in most modes. ★ Make more efficient use of memory and faster response time thanks to machine code content.

★ **Features that were not in the original Mini Office.**

When it was launched in October, 1984, Mini Office was acclaimed as the most innovative software of the decade, creating new standards in serious programming – and at a price everyone could afford.

Since then it has become far and away one of the best-selling packages ever created for the home computer, frequently displacing games from their position in the Top Ten. And, unlike most software releases, it is still as much in demand now as it was 15 months ago.

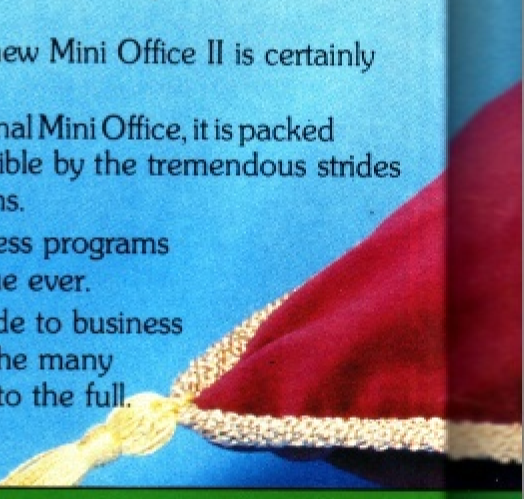
Which is why there has been so much speculation throughout the industry about what the much-rumoured Mini Office II would be like. After all, how do you beat a best-seller?

The answer is – by making it even better! And the new Mini Office II is certainly that . . . in every respect.

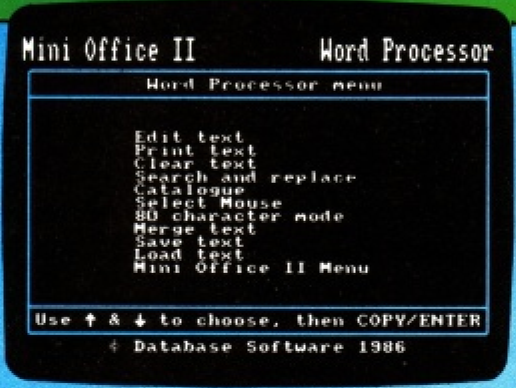
While still retaining upward compatibility with the original Mini Office, it is packed with a host of new features that have been made possible by the tremendous strides made in programming techniques in the last 12 months.

The result is the most comprehensive suite of business programs ever produced for the Amstrad – and still the best value ever.

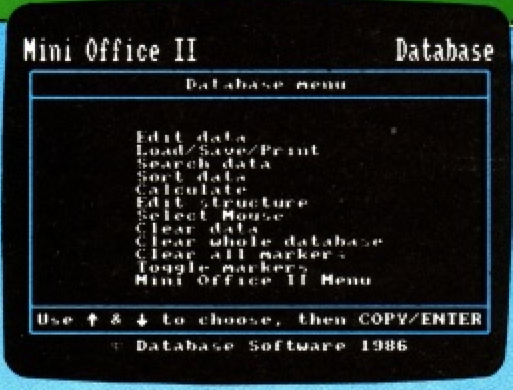
And it comes with a no-nonsense easy-to-follow guide to business computing that will take you step by step through all the many features, showing you how to use their huge potential to the full.



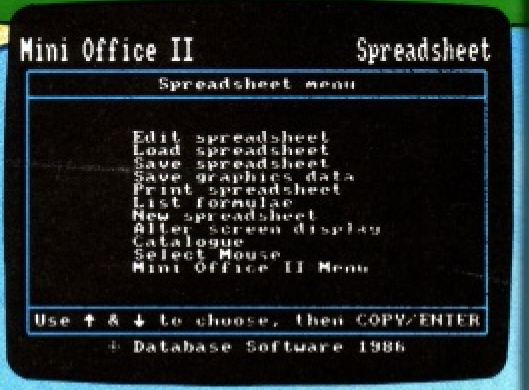
It's a word processor . . .



It's a database . . .



It's a spreadsheet . . .



It's MINI OFFICE II on the Amstrad 464, 664 and 6128

e Software

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Post to: Database Publications, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.



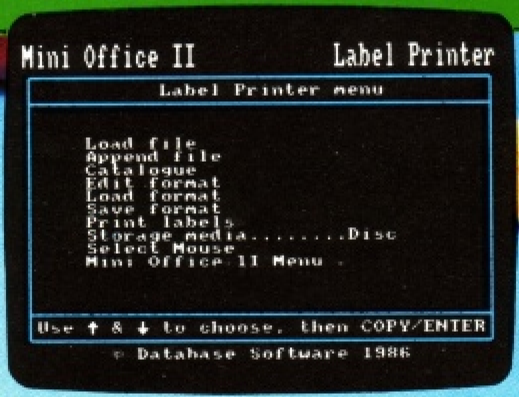
It's a graphics pack . . .



It's a comms pack . . .



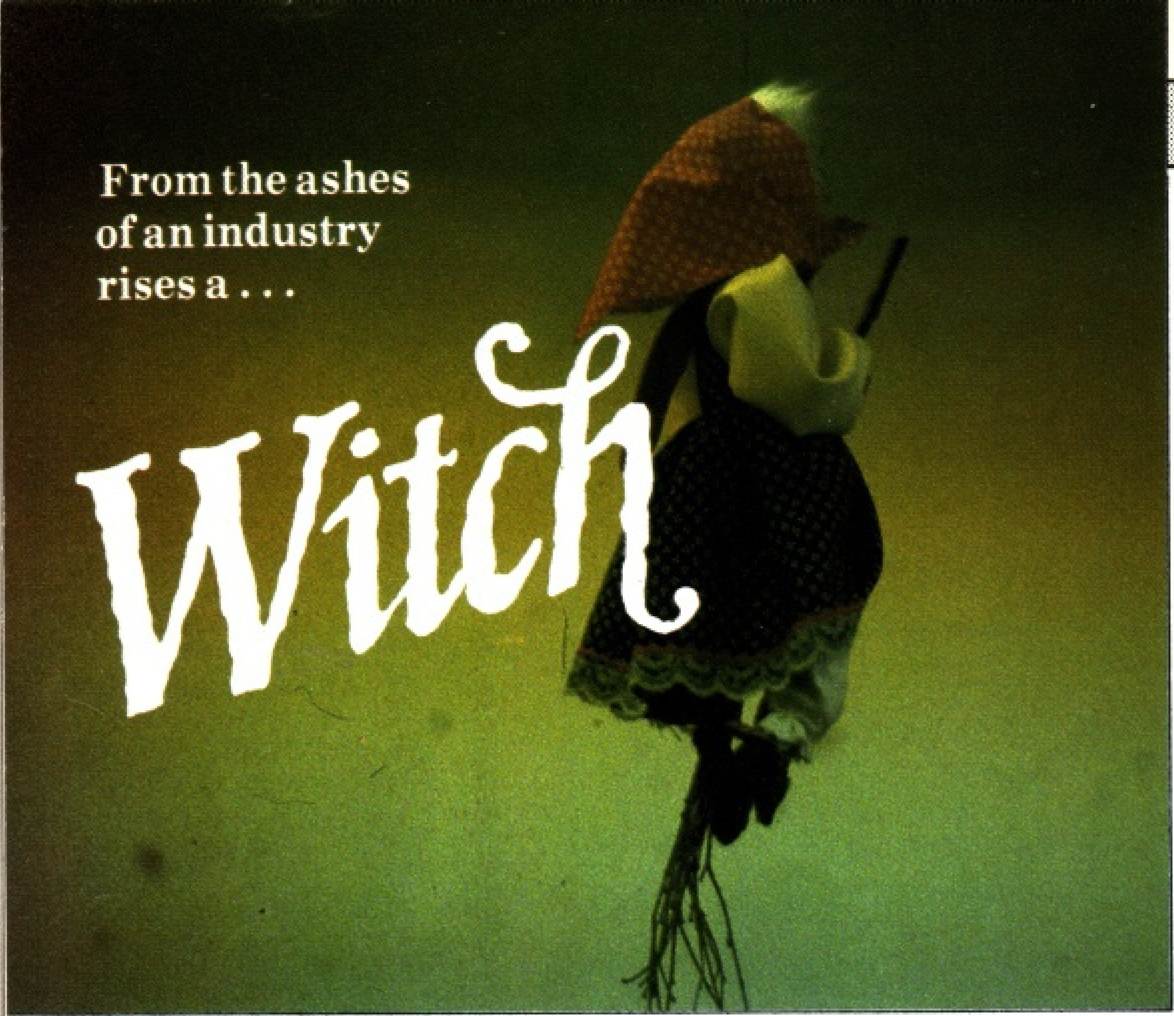
It's a label printer . . .



All 6 modules for £14.95 (cassette), £19.95 (3" disc)

From the ashes of an industry rises a . . .

Witch



Early in 1984 an ex-Virgin executive convinced Palace Video that what they really needed was a games software arm. This was something of a strange claim, since at that time the games industry was in a state of change, from a market of rich pickings where a company could expect to sell just about anything to anyone who was even faintly interested in home computers to an industry which seemed to be in the throes of dying off, leaving a graveyard scattered with the bones of once famous companies.

Despite the signs of doom and despair Pete Stone got his way. He and Richard Leinfellner moved from selling videos in the Video Palace to a rather old cinema in Pentonville Road. The Scala Cinema is a centre for cult films – by 1985 it had also become a centre of games excellence.

Palace's first game, The Evil Dead, didn't shake the Earth. Pete dismisses it. "In retrospect it was an experiment, we learnt a great deal about games software from that game, not least that there was a great deal more to the business than just getting the game coded and into the machine".

That lesson gave rise to the Palace philosophy which recognises four major components of a successful games. To begin with there had to be the concept, probably not from a programmer, more likely from an artist.

Then the imagery of the game would be more professional if it could be designed by an artist, as would the music if it were composed and arranged by a musician. The final task, the programming, would bring together the code from the artist, the musician and make it all work in one, cohesive game.

Putting together a team which included all of these separate talents was stage two in the development of Palace. Dan and Mark do nothing else but design the background and characters for the games. The artwork is developed on the target computer, so for the Amstrad game Mark used the Amsoft screen designer. Richard Joseph, the musician, is responsible for getting his music into the respective machine. He can't just present the programmer with a score, it has to be the code so he is experienced in using the same music development packages available to your or I.

Even now Palace are not satisfied with the arrangement. Stage three is to move away from the traditional method of writing a game on one machine and then converting it over to the others. Instead, they are expanding their teams so that they can create games for all three major machines at once.

Each machine will have its own programmer who knows how best to exploit the machine's strengths. But the artists work in a different way, instead of being tied to one machine they concentrate on one game. Dan Malone, for example, is working on the design of the next Palace game, Sacred Armour of Antiriad. He will do the design work for that game on all three machines.

The results

After creating Cauldron, Palace have a lot to live up to and their next two games show every sign of matching the magic of the first. In Cauldron II the player takes the part of a rather splendid bouncing pumpkin. The pumpkin suffered something of a hard time in Cauldron at the hands of a rather unpleasant witch.

Well now it's time to turn the tables. The task is to enter the witch's castle and cut from her head a lock of nasty, greasy, green hair. The hair is essential to the spell which will rid the world of this nasty lady. Of course getting the hair isn't a simple task, there are all manner of problems to be solved, enemies to be killed and booby traps to be avoided.

If anything the theme and game play of Cauldron II is even better than in Cauldron I. Moving about the castle is a



Mark, the Amstrad artist, wrestling with Screen Designer



Cauldron II

very hairy *(Ouch!-Ed)* business. Not only are there gremlins who obscure your path and reduce your energy when you come into contact with them, but the traps are really hideous.

Take the gargoyles. They seem to be pretty inanimate objects until you stand on one and find that it tilts, casting the little pumpkin into oblivion. Getting to the lock of hair will mean finding and using a collection of other objects, any one of which can only be obtained at great personal pumpkin peril.

In Cauldron I the pumpkin was the bad guy, with his nasty leering grin and altogether bad designs on a poor and wretched witch seeking promotion. The pumpkin in Cauldron II is son of the nasty one and he is altogether a more lovable character, cuddly almost.

I was so perplexed by this wonderful bouncing action of his that I wanted to



take him home with me but alas, they needed him for further development.

Palace have moved beyond the one game a year stage and their larger programming team should ensure that while the productivity of the company goes up the quality remains the same, or even improves. There was much evidence of this from what I saw of the Sacred Armour of Antiriad.

PALACE software

More than just witches and pumpkins

This game will come complete with a comic to help set the scene. The comic and the concept are the work of Dan Malone. Dan approached Palace as a talented artist with a portfolio, rich with bright and fresh ideas, but he had never touched a computer. The deal was that if he could turn out the same quality of work on a computer then Palace wanted him on the team.

"He took to computers like a duck to water", Pete reflected. Dan has a great affection for comics and his ideas for Antiriad were put across in comic terms. Gradually Pete and Richard realised that a great deal could be made of a game that began with a comic story and continued with the comic characters in the game. Thus Antiriad came into being.

The story begins with two major powers haggling over arms limitation. Both sides believe that the other side is busy creating a super weapon, the anti-radiation armour. But this armour is more than just a suit of protective clothing, it becomes the wearer's personal tank.

Anyway, the arms limitation talks came to nothing when the two powers decided that the most expedient way of settling the argument was to blow each other up. This they did, and the world was left short of a few hundred million people. In fact civilisation vanished, leaving the charred Earth to evolve again.

Millions of years later a primitive but friendly bunch roamed the lands that had once been Maddison Square Gardens. The culture of these people was based on what they perceived as a god but in fact it was the blueprints of an anti-radiation suit. Due to an unfortunate tear in the plans they perceived the name to be Antiriad, but whatever the spelling of this being they worshipped it none the less.

This happy state of affairs continued for some time to come until a bunch of much more clever aliens descended on Earth and enslaved the inhabitants. The human elders took exception to this and decided that they would have to select their very best warrior to find the famed suit of Antiriad and do the aliens in. That's where the comic ends and the game begins.

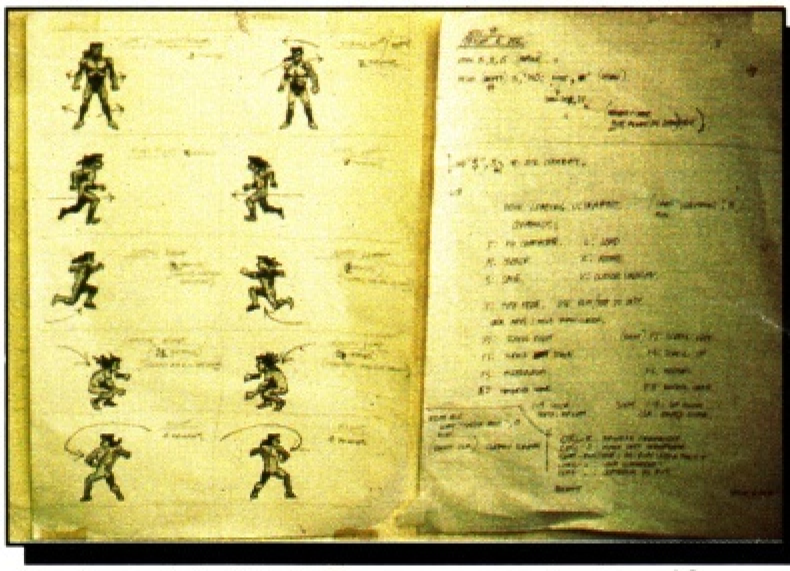
Looking forward, looking forward

Palace have a number of plans for the future, one of the most promising is their tie up with Binary Vision, part of the team who created Fourth protocol and Zoids. Binary Vision have an excellent reputation for producing games which aren't just technically clever but which are conceptually brilliant. Without a doubt we have a great deal to look forward to from Palace.

Perhaps they might even get round to tarting the Scala Cinema up so it resembles the company logo. Now that would do more for the value of Pentonville Road than a couple of silly red hotels.



Pages from Dan Malone's comic. The opening story to the Sacred Armour of Antiriad



The hero of Antiriad. The sequences give some idea of the work that goes into an animated character

ACU

SPACE MANIA

By Neil Kolban

Here is the second part of our prize winning mega-listing. We originally intended to finish the listing this month but have had to hold the rest of the listing over until next month. Still there is plenty here for you to be getting on with. Good luck and happy typing.

```
1410 DATA 51411100FF002B00, 461
1420 DATA 6641B600FF002800, 644
1430 DATA 870F18000100028FF, 470
1440 DATA 901A00027F051E02, 336
1450 DATA 04051D022D051C02, 120
1460 DATA 014B32028B2E3102, 364
1470 DATA 5A0531001B0A2800, 221
1480 DATA 010032003F282800, 194
1390 DATA 3F432800FF003A04, 487
1400 DATA 510F110001002804, 158
```

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1520 DATA 3F461A020A0C3302, 236
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1540 DATA 40052E00010028FF, 411
1550 DATA 482280021C021E02, 298
1560 DATA 480C1A026A331B02, 298
1570 DATA 0B4D1C0202281D01, 190
1580 DATA 9A1123019A1BA201, 551
1590 DATA 2E08A20024491602, 349
1600 DATA FF2412FF873C0002, 761
1610 DATA 812F1E0263262702, 386
1620 DATA 03033302034C3302, 191
1630 DATA 032833002C41BA00, 389
1640 DATA FF00280086053B00, 493
1650 DATA 01001EFF51020002, 371
1660 DATA 7E041E020A043302, 229
1670 DATA 2D2827020A4A3202, 262
1680 DATA 7334310290433000, 477
1690 DATA 243F2800FF001A00, 420
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1710 DATA 8E0A380001000A00, 219
1720 DATA 8E27B900FF0009FF, 885
1730 DATA 90050002012D2702, 238
1740 DATA 54001E02024B1C02, 223
1750 DATA 632C310216091A00, 251
1760 DATA 7E1F280001000F00, 213
1770 DATA 3E133C00010032FF, 447
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1790 DATA 4E3D33026A191C02, 353
1800 DATA 6A101C024A341D02, 309
1810 DATA 124B30001A193D00, 253
1820 DATA 0100280195402C00, 299
1830 DATA 17082000010028FF, 359
1840 DATA 5A05000249051E02, 207
1850 DATA 763033020C0D1B02, 273
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1870 DATA 372722009146AE00, 517
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1890 DATA 00140007 6B1C2318, 221
1900 DATA 08FF074814231808, 429
1910 DATA 01FF630200022501, 397
1920 DATA 1E02244233022D37, 287
1930 DATA 3202631A3102903E, 434
1940 DATA 30000B1B3E02001E, 180
1950 DATA 00009111C0000100, 355
1960 DATA 1B002C083E000100, 142
1970 DATA 22FF904B80023649, 765
1980 DATA 1E02094B1A026E4C, 330
1990 DATA 1B02630D1D021B09, 208
2000 DATA 32003F2014000100, 166
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2050 DATA 0287443101994116, 495
2060 DATA 016C081608480830, 275
2070 DATA 01140508483330FF, 460
2080 DATA 1805077E38931603, 390
2090 DATA 0107982D931603FF, 632
2100 DATA 0798209318O3FF07, 627
2110 DATA 7E1493180301FF3F, 639
2120 DATA 2500009430460001, 304
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2150 DATA 0E3C023C131E0234, 239
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2170 DATA 1A3102881F1DFF3F, 591
2180 DATA 1500009012480001, 256
2190 DATA 001E00663CB600FF, 629
2200 DATA 002A028A021E0207, 223
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2220 DATA 461DFF2D0500002B, 447
2230 DATA 4AB800FF0014008F, 676
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2260 DATA 201C0264441C0759, 354
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2290 DATA 0B022D001E029247, 307
2300 DATA 310241281C020245, 257
2310 DATA 30FF36188000960C, 671
2320 DATA 520001002D001B3C, 215
2330 DATA 4000FF001A027E45, 542
2340 DATA 1E0212431A02761A, 289
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2360 DATA 1DFF48030000501E, 469
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2390 DATA 3E0001000F073F14, 168
2400 DATA 8A1B03010759198A, 428
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2420 DATA 1904028 72F1E021E, 275
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2440 DATA 1E00004D42A000FF, 588
2450 DATA 003200230 83C0001, 154
2460 DATA 001E006C3A220200, 232
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2480 DATA 4C1A02920A1D0246, 361
2490 DATA 063202124C1B082D, 232
2500 DATA 3030011404FF0000, 376
```

```
10 ' space mania listing 4
20 '
30  MEMORY &7FFF
40 addr=&8000
50 FOR ln=1000 TO 5790 STEP 10
60   READ bigdata$,checksum
80   checkall=checkall+checksum
90   FOR pointer=1 TO 16 STEP 2
100      byte$=MID$(bigdata$,pointer,2)
```

```
110      c$=MID$(byte$,1,1):GOSUB 210:c$=
   MID$(byte$,2,1):GOSUB 210
120      result=VAL("&"+byte$)
130       POKE addr,result
140      addr=addr+1
150      checksum=checksum-result
160 NEXT pointer
170 IF checksum<>0 THEN PRINT"CHECKSUM E
   RROR IN LINE";ln,bigdata$:STOP
```

```
180 NEXT ln
190 IF checkall=241325 THEN SAVE"mania4"
    ,b,&8000,&EFF ELSE PRINT"Incorrect n
    umber of data lines"
200 STOP
210 IF INSTR("0123456789ABCDEF",UPPER$(c
    $))=0 THEN PRINT"Typing error in lin
    e";ln,bigdata$ :STOP:ELSE RETURN
220 '
230 '
1000 DATA 031200C00040C080, 597
1010 DATA 4090204090204090, 688
1020 DATA 2000C00000C00068, 520
1030 DATA C08068C08068E880, 1208
1040 DATA 40D4F840C08040C0, 1164
1050 DATA 8000C00000C00000, 512
1060 DATA C00000C00000C080, 704
1070 DATA 00031200C00040C0, 469
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1090 DATA 902000C00000C000, 560
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1140 DATA C000040300C0C000, 583
1150 DATA 40C0C0807474B8B8, 1176
1160 DATA 400401B8B8B8B840, 869
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1220 DATA 0409303030302C2C, 293
1230 DATA 2C2C1C1C1C1C2C2C, 288
1240 DATA 2C2C1C1C1C1C2C2C, 288
1250 DATA 2C2C1C1C1C1C2C2C, 288
1260 DATA 2C2C1C1C1C1C4004, 268
1270 DATA 0930303030FCFCFC, 957
1280 DATA FCFCFCFCFC0C0C0C, 1296
1290 DATA 0C0C0C0CC0C0C0C0, 636
1300 DATA C0C0C0C0C0C0C0C0, 1536
1310 DATA C030303030400409, 461
1320 DATA 30303030C00000C0, 576
1330 DATA C08040C080C0C040, 1152
1340 DATA 8040804080C0C040, 960
1350 DATA C08040C0C00000C0, 960
1360 DATA C0C0C0C040040930, 893
1370 DATA 303030AC0C0C0CAC, 524
1380 DATA FCFCACACAC0CACAC, 1376
1390 DATA ACACACACFCACACAC, 1456
1400 DATA 0C0CACFCFCFCAC0C, 1136
1410 DATA 0C0C0C400409B0B0, 465
1420 DATA B0B00C0C0C0C0C0C, 424
1430 DATA A40C0C0C580C58F0, 628
1440 DATA F0A40C0C580C0C0C, 552
1450 DATA A40C0C0C0C0C0C0C, 248
1460 DATA 0C0C400409707070, 437
1470 DATA 700C0C0C0C0C580C, 272
1480 DATA 0C0CA40C0C58F0F0, 780
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1510 DATA 0C40040960606060, 473
1520 DATA C0C0C0C0C0C0C0C0, 1536
1530 DATA D0D0D0F0D0D0D0D0, 1696
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1540 DATA D0D0D0F0D0D0D0C0, 1680
1550 DATA D0F0D0C0C0C0C0C0, 1616
1560 DATA 400409FCFCFCFCA8, 1253
1570 DATA A8A8A854545454A8, 1008
1580 DATA A8A8A854545454A8, 1008
1590 DATA A8A8A854545454A8, 1008
1600 DATA A8A8A85454545400, 840
1610 DATA 0409303030F0F0F0, 685
1620 DATA F0F0A40C0C58A4FC, 1172
1630 DATA FC58A4ECDC58A4EC, 1448
```

```
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1650 DATA 0C58F0F0F0F04004, 1128
1660 DATA 09C0C0C0C0C0F0E0, 1433
1670 DATA C0C0F0F0C0C0C0F0, 1680
1680 DATA C0C0C0F0C0C0D0E0, 1632
1690 DATA C0C0D0E0C0C0C0C0, 1584
1700 DATA C0C0D0E0C0400409, 1085
1710 DATA 30303030CC0CCC0C, 624
1720 DATA CC0CCC0CCC0CCC0C, 864
1730 DATA CC0CCC0CCC0CCC0C, 864
1740 DATA CC0CCC0CCC0CCC0C, 864
1750 DATA CC0CCC0C40040930, 557
1760 DATA 303030CC0CCC0CCC, 780
1770 DATA 0CCC0C0CCC0CCC0C, 672
1780 DATA CC0CCCCC0CCC0CCC, 1056
1790 DATA 0CCC0C0CCC0CCC0C, 672
1800 DATA CC0CCC4004093030, 593
1810 DATA 30300C0C0C0C0C0C, 168
1820 DATA 0C0CCCCCCCCCCCCC, 1248
1830 DATA CCCC0C0C0C0C0C0C, 480
1840 DATA 0C0CCCCCCCCCCCCC, 1248
1850 DATA CCCC400409303030, 629
1860 DATA 300CCC0CCC8C4C8C, 836
1870 DATA 4CCC0CCC0C4C8C4C, 800
1880 DATA 8C0CCC0CCC8C4C8C, 928
1890 DATA 4CCC0CCC0C4C8C4C, 800
1900 DATA 8C40040930303030, 409
1910 DATA CC0CCC0C8C4C8C4C, 864
1920 DATA 0CCC0CCC4C8C4C8C, 864
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1930 DATA CC0CCC0C8C4C8C4C, 864
1940 DATA 0CCC0CCC4C8C4C8C, 864
1950 DATA 40031200C30041C3, 540
1960 DATA 8241438241432A41, 631
1970 DATA 432A41C3A000C300, 724
1980 DATA E3C382E3E382E3E3, 1590
1990 DATA 0841E38241F38241, 933
2000 DATA C38200C00041C382, 907
2010 DATA C34182C300828200, 845
2020 DATA C300031200C30041, 476
2030 DATA C38241C18241C12A, 1013
2040 DATA 41C12A41C32200C3, 789
2050 DATA 0069C38269E38269, 997
2060 DATA D38241C3F341C382, 1234
2070 DATA 41C38200030000C3, 588
2080 DATA 0000C30000C30000, 390
2090 DATA C382000409220000, 372
2100 DATA 2211001100002222, 136
2110 DATA 00113333003331B1B, 224
2120 DATA 2233273322331B1B, 314
2130 DATA 2233333322113F3B, 360
2140 DATA 0040000000040911, 94
2150 DATA 0011001100110000, 51
2160 DATA 2222001133330033, 238
2170 DATA 273322331B1B2233, 314
2180 DATA 2733223333332211, 328
2190 DATA CF9B004000000003, 429
2200 DATA 12000F00050F0A0F, 78
2210 DATA FFAA0FFFAA050F0A, 895
2220 DATA 002200050F000F0F, 84
2230 DATA 0A0F2F0A0F2F0A0F, 169
2240 DATA 2F0A0F3F3F0F0F0A, 238
2250 DATA 050F00000A00000A, 40
2260 DATA 0001330033032200, 140
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2270 DATA 0312000F00050F0A, 66
2280 DATA 0FFFAA0FFFAA050F, 900
2290 DATA 0A002200050F000F, 79
2300 DATA 0F0A0F2F0A0F2F0A, 169
2310 DATA 0F2F1F0F1F2A0F0F, 211
2320 DATA 0A050F00000A0000, 40
2330 DATA 0A00110300033302, 86
2340 DATA 00030600333311C3, 323
2350 DATA 3333339363939363, 792
2360 DATA 9322333300000307, 293
2370 DATA 0011000026221119, 131
2380 DATA 191119192600C3326, 231
2390 DATA 0C22333322680306, 295
2400 DATA 003300110C22260C, 164
2410 DATA 19260C19110C2200, 163
2420 DATA 3300330306003300, 162
2430 DATA 41338233C33333C3, 789
2440 DATA 3341338200330033, 399
2450 DATA 040500F0F000503C, 629
2460 DATA 3CA0B43C3C78F0F0, 1120
2470 DATA F0F000152A000003, 546
2480 DATA 0D150000002A0015, 97
2490 DATA 3F2A3F3F3F3F3B37, 471
2500 DATA 3F3B153F3B37153F, 404
2510 DATA 2A003F00153F2A15, 252
2520 DATA 152A3F002A2A003F, 273
2530 DATA 00030D002A00002A, 100
2540 DATA 00153F2A3F3F3F3F, 378
2550 DATA 3B373F3B153F3B37, 434
2560 DATA 153F2A003F00003F, 252
2570 DATA 00003F00003F0000, 126
2580 DATA 3F2A000408450045, 255
2590 DATA 00008A008A008A00, 414
2600 DATA 8A8ACF4500CF0102, 762
2610 DATA 45008B478A454545, 624
2620 DATA 008A8A008AF80408, 674
2630 DATA 45000045008A008A, 414
2640 DATA 8A8A008A8ACF4500, 828
2650 DATA 450102008A8B478A, 558
2660 DATA 454545458A45008A, 621
2670 DATA F80407008B3220011, 489
2680 DATA 73B300B3B3732233, 852
2690 DATA F37322B33333A211, 852
2700 DATA B373000B3220090, 651
```

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2710 DATA 050900CFC5000045, 487
2720 DATA 8BCF80008BCA03CF, 1025
2730 DATA 00C5CFC5478ACF47, 1088
2740 DATA 8BCF80CA03CF478A, 1095
2750 DATA 45C503CF0000CFCF, 890
2760 DATA 8A00004547000000, 278
2770 DATA 0709800000000000, 144
2780 DATA 00603C3C00000000, 216
2790 DATA 9080000000000060, 368
2800 DATA 6000000000009090, 384
2810 DATA 8000000000606060, 416
2820 DATA C03C68009090C0C0, 1028
2830 DATA C0C080C0C0C0C0C0, 1472
2840 DATA C090747474747474, 1032
2850 DATA 20000409F3F3F3A2, 936
2860 DATA E3C3C3A2E33363A2, 1318
2870 DATA E363C3A2E33363A2, 1222
2880 DATA E3C363A2E33363A2, 1222
2890 DATA E3C3C3A2F3F3F3A2, 1670
2900 DATA 0006043030303030, 250
2910 DATA 30C0FCC0FCC0FCC0, 1572
2920 DATA FCC0FCC0FCC0FCC0, 1776
2930 DATA FCC0FC6806043030, 906
```

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2940 DATA 30303030FCC0FCC0, 1080
2950 DATA FCC0FCC0FCC0FCC0, 1776
2960 DATA FCC0FCC0FCC06804, 1440
2970 DATA 10000F0A00050F0F, 76
2980 DATA 000F0F0F0A1B2733, 172
2990 DATA 0A1B05330A1B0522, 169
3000 DATA 0A1B27220A1B2733, 237
3010 DATA 0A0F0F0F0A0F0F0F, 110
3020 DATA 0A0A00000A1B0011, 74
3030 DATA 0A1B0F1B0A1B0F1B, 158
3040 DATA 0A050F0F00000F0A, 70
3050 DATA 0000041000 0F0A00, 45
3060 DATA 050F0F000F0F0F0A, 90
3070 DATA 1B27330A1B27220A, 237
3080 DATA 1B05220A1B05330A, 169
3090 DATA 1B27330A0F0F0F0A, 182
3100 DATA 0F0F0F0A0A00000A, 75
3110 DATA 1B00110A1B0F1B0A, 133
3120 DATA 1B0F1B0A050F0F00, 114
3130 DATA 000F0A0000050D1B, 70
3140 DATA 110000000A050522, 71
3150 DATA 000A0F050A000A0F, 65
3160 DATA 000A000F050A0A00, 50
3170 DATA 050A0F0A00000A05, 55
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3180 DATA 0000151F2F3F0015, 183
3190 DATA 3F3F3F00153F3F3F, 399
3200 DATA 00153F3F3F00003F, 273
3210 DATA 3F2A0000153F0000, 189
3220 DATA 00050D1B05220000, 84
3230 DATA 0F0F00110A0A0A00, 77
3240 DATA 050A0A0F00050A0F, 70
3250 DATA 05000F0005050F0A, 55
3260 DATA 00050A0F0000151F, 82
3270 DATA 2F3F00153F3F3F00, 320
3280 DATA 153F3F3F00153F3F, 357
3290 DATA 3F00003F3F2A0000, 231
3300 DATA 153F000000031115, 125
3310 DATA 3F003F332A3F222A, 358
3320 DATA 3F332A3F3F00013F, 346
3330 DATA 2A01020003030203, 56
3340 DATA A30203A3020353B7, 602
3350 DATA 0103020003000103, 13
3360 DATA 0203010203000202, 15
3370 DATA 000380031115 3F00, 235
3380 DATA 3F332A3F222A3F33, 409
3390 DATA 2A3F3F00013F2A01, 275
3400 DATA 020003030203A302, 178
3410 DATA 03A3020353B30103, 437
3420 DATA 0200030000030000, 8
3430 DATA 0300000300000302, 11
3440 DATA 8004070011000000, 156
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3450 DATA 63220011C3930063, 591
3460 DATA C3C32211C3930000, 783
3470 DATA 63220000110000E8, 382
3480 DATA 0406112211226393, 358
3490 DATA 639363C3C39363C3, 1176
3500 DATA C393639363931122, 885
3510 DATA 1122000507002200, 97
3520 DATA 2200119311930063, 461
3530 DATA C363C32211C3C393, 1077
3540 DATA 000063C322000011, 345
3550 DATA 9300000000220000, 181
3560 DATA 8004073333332263, 425
3570 DATA 93C3226363632233, 758
3580 DATA C393226363632263, 806
3590 DATA 93C32233333322E8, 795
3600 DATA 040A003F2A00153F, 203
3610 DATA 3F003F03172A2B3F, 300
3620 DATA 2B2A2B2B2B2A2B2B, 342
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3630 DATA 2B2A2B3F2B2A3F03, 342
3640 DATA 172A153F3F00003F, 275
3650 DATA 2A00C0040A000302, 253
3660 DATA 0001030300033F2B, 116
3670 DATA 0217031702171717, 122
3680 DATA 0217171702170317, 122
3690 DATA 02033F2B02010303, 120
3700 DATA 0000030200C0040F, 216
3710 DATA 003B2200003B0200, 154
3720 DATA 003B3B22002A3B02, 255
3730 DATA 002A3B22003F2A00, 240
3740 DATA 153F3F003F173F2A, 338
3750 DATA 3F173F2A3F2B172A, 362
3760 DATA 153F3F00003F2A00, 252
3770 DATA 0015000000150000, 42
3780 DATA 003F2A0000040E00, 123
3790 DATA 3B2200003B020000, 154
3800 DATA 3B3B22002A3B0200, 255
3810 DATA 2A3B22003F2A0015, 261
3820 DATA 3F3F003F173F2A3F, 380
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3830 DATA 173F2A3F2B172A15, 320
3840 DATA 3F3F00003F2A0000, 231
3850 DATA 150000003F2A0000, 126
3860 DATA 0314000300010302, 32
3870 DATA 03030311372A112B, 183
3880 DATA 2A113F2A113F0011, 261
3890 DATA 1500003F00153F2A, 210
3900 DATA 151F2A152F5B153F, 337
3910 DATA 2A153F2A000F0000, 183
3920 DATA 3F00153F2A3F152A, 315
3930 DATA 3F002A2A003F0003, 213
3940 DATA 1400030001030203, 32
3950 DATA 030311372A112B2A, 222
3960 DATA 113F2A113F001115, 240
3970 DATA 00003F00153F2A15, 210
3980 DATA 1F2A152F5B153F2A, 358
3990 DATA 153F2A000F00003F, 204
4000 DATA 00003F00003F0000, 126
4010 DATA 3F00003F2A000413, 191
4020 DATA 0005000000F0A00, 30
4030 DATA 051B2700051B0500, 108
4040 DATA 051B050A050F0F0F, 97
4050 DATA 050F0A0F050F0A00, 75
4060 DATA 000F0000050F0A00, 45
4070 DATA 0F8F0F000FCF0F00, 410
4080 DATA 0F4FCF00050F0F00, 336
4090 DATA 000F0000050F0A00, 45
4100 DATA 0F050A000F000A00, 55
4110 DATA 0A000F0000041300, 48
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4120 DATA 050000000F0A0005, 35
4130 DATA 1B2700051B050005, 108
4140 DATA 1B050A050F0F0F05, 97
4150 DATA 0F0A0F050F0A0000, 70
4160 DATA 0F000050F0A000F, 60
4170 DATA 8F0F000FCF0F000F, 410
4180 DATA 4FCF00050F0F0000, 321
4190 DATA 0F0000000F000000, 30
4200 DATA 0F0000000F000000, 30
4210 DATA 0F0A0000050A0003, 43
4220 DATA 0303000103033302, 66
4230 DATA 0303032203030303, 55
4240 DATA 2203030303030303, 55
4250 DATA 4747470301 8B8B8B, 634
4260 DATA 02008F8F8F00008A, 569
4270 DATA 8A8A00008A8A8A00, 690
4280 DATA 80050A0003030300, 152
4290 DATA 0103033302030303, 69
4300 DATA 2203030303220303, 86
4310 DATA 0303030303474747, 228
4320 DATA 03018B8B8B02008F, 566
4330 DATA 8F8F00008A8A8A00, 700
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4340 DATA 004545450080030A, 348
4350 DATA 0003000103020303, 15
4360 DATA 03173F2337153337, 306
4370 DATA 1533173F23030303, 202
4380 DATA 0103020003000003, 12
4390 DATA 0A00030001330203, 70
4400 DATA 3703133F2B332A3B, 335
4410 DATA 332A3B133F2B0337, 335
4420 DATA 0301330200030000, 60
4430 DATA 040C003F2A001511, 159
4440 DATA 3F003F11372A3F33, 354
4450 DATA 3F2A3F3F3F3F2222, 425
4460 DATA 223F000003F0000, 160
4470 DATA 003F1111113F3F3F, 303
4480 DATA 3F2A3F3F3F2A153F, 420
4490 DATA 3F0000040A003F2A, 182
4500 DATA 0015113F003F1137, 236
4510 DATA 2A3F333F2A3F3F3F, 450
4520 DATA 3F2222223F111111, 279
4530 DATA 3F3F3F3F3F3F3F3F, 504
4540 DATA 2A153F3F003F0412, 274
4550 DATA 00C0000040C08000, 576
4560 DATA 4090205440902054, 648
4570 DATA 40902054 00C00054, 600
4580 DATA 00C0005468C08054, 784
4590 DATA 68C0D0F468E88054, 1296
4600 DATA 40D4F8F440C08054, 1236
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4610 DATA 40C0805400C00054, 744
4620 DATA 00C0005400C00054, 552
4630 DATA 00C0005400C08054, 680
4640 DATA 00030A00A00054F4, 501
4650 DATA 00F8F8A8F4F4A0F8, 1560
4660 DATA F8A8F4F4A0F8F8A8, 1728
4670 DATA F4F4A050F80000A0, 1136
4680 DATA 00800210F4CDF4CD, 1044
4690 DATA F4CDF4CDF4CDF4CD, 1796
4700 DATA F4CDF4CDF4CDF4CD, 1796
4710 DATA F498F498F498F498, 1584
4720 DATA F498F49868050A01, 912
4730 DATA 0000000003000000, 3
4740 DATA 000300F301020300, 252
4750 DATA A703220302031300, 231
4760 DATA 0303032200010302, 49
4770 DATA 0000000302222200, 73
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4780 DATA 0103030300000303, 16
4790 DATA 0200050A01000000, 18
4800 DATA 0003000000000300, 6
4810 DATA F300000300A70000, 413
4820 DATA 0302030302030303, 22
4830 DATA 0303010313111100, 63
4840 DATA 0302222200010303, 80
4850 DATA 0300000303020004, 15
4860 DATA 1200152A00003F3F, 207
4870 DATA 00003F972A003F3F, 382
4880 DATA 2A00153F0000152A, 189
4890 DATA 0000050A00000F0F, 45
4900 DATA 00005B0F00005BA7, 364
4910 DATA 00000FF3A2002F0F, 482
4920 DATA 00157BF3001551A2, 651
4930 DATA 001551F3002AF351, 711
4940 DATA 002AF3510000A251, 609
4950 DATA A200041200152A00, 247
4960 DATA 003F3F00003F972A, 382
4970 DATA 003F3F2A00153F00, 252
4980 DATA 00152A0000050A00, 78
4990 DATA 000F0F00005B0F00, 136
5000 DATA 000FF3A2000F0F00, 450
5010 DATA 002F0F00157BF300, 449
5020 DATA 1551A2001551A200, 528
5030 DATA 1551A2001551A200, 528
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5040 DATA 2A51F30000040B00, 381
5050 DATA 40800000D4E80000, 636
5060 DATA C0C0000040800000, 576
5070 DATA 408000054A850A0, 684
5080 DATA C0C050E06090D0B0, 1312
5090 DATA C0C070E06090D0A0, 1328
5100 DATA 000050000104F0F0, 565
5110 DATA F0F000060B0010C0, 705
5120 DATA 1000000040806000, 304
5130 DATA 0000C0C0C0800040, 768
5140 DATA 6060C09000909090, 960
5150 DATA C0802060C06030C0, 976
5160 DATA 2060609060600060, 656
5170 DATA 609090C000409060, 880
5180 DATA C0900040C0906090, 976
5190 DATA 000060C0C0200000, 512
5200 DATA 080F000000000000, 23
5210 DATA 0002000000000000, 2
5220 DATA 018B000000000000, 140
5230 DATA 4703000000000001, 75
5240 DATA 8B8B000003030347, 358
5250 DATA 470300010F0F0F0F, 135
5260 DATA 0B03001323CBCB8B, 613
5270 DATA 0B02031B27C7C787, 615
5280 DATA 0B0000070F0F0F0F, 78
5290 DATA 0B0000015B5B5B5B, 376
5300 DATA 0B02000003030347, 93
5310 DATA 4703000000000001, 75
5320 DATA 8B8B000000000000, 278
5330 DATA 4703000000000000, 74
5340 DATA 018B000000000000, 140
5350 DATA 000200040A000000, 16
5360 DATA 000000000000CFCF, 414
5370 DATA 0045CFCF8ACFCFCF, 1242
5380 DATA CFCFCFCFCFCFCFCF, 1656
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5390 DATA CFCFCFCFCF45CFCF, 1518
5400 DATA 8A00CFCF0000030A, 565
5410 DATA 00CF0045CF8ACFCF, 1035
5420 DATA CFCFCFCFCFCFCFCF, 1656
5430 DATA CFCFCFCFCFCFCFCF, 1656
5440 DATA 45CF8A00CF00CF06, 834
5450 DATA 0E0000F3A2000000, 419
5460 DATA 51B373000000F3B3, 797
5470 DATA 51A20000F3B373A2, 942
5480 DATA 0000F3F3F3A20003, 894
5490 DATA 030303030203CFC3, 419
5500 DATA CF03020103030303, 225
5510 DATA 0000030303020000, 11
5520 DATA 0003000000000003, 6
5530 DATA 0200000001020300, 8
5540 DATA 0000010001000000, 2
5550 DATA 010201020000060E, 26
5560 DATA 0000F3A200000051, 486
5570 DATA B373000000F3B351, 797
5580 DATA A20000F3B373A200, 861
5590 DATA 00F3F3F3A2000303, 897
5600 DATA 0303030203CFC3CF, 623
5610 DATA 0302010303030300, 18
5620 DATA 0003030302000000, 11
5630 DATA 0300000000000300, 6
5640 DATA 0000000003000000, 3
5650 DATA 0000030000000000, 3
5660 DATA 030200000040C00, 21
5670 DATA 3F3F00153F3F2A3F, 378
5680 DATA 333F3F3F223F3F3F, 463
5690 DATA 223F3F3F333B333F, 447
5700 DATA 333B333F3F3F3F3F, 476
5710 DATA 3F3F3F3F3F3F3F3F, 504
5720 DATA 3F3F3F2A2A2A2A00, 357
5730 DATA 040C003F3F00153F, 226
5740 DATA 3F2A3F333F3F3F22, 442
5750 DATA 3F3F3F223F3F3F33, 463
5760 DATA 2A223F332A003F3F, 358
5770 DATA 3B113F3F3F3F3F3F, 454
5780 DATA 3F3F3F3F3F3F1515, 420
5790 DATA 1515000000000000, 42
```

```
10 ' space mania listing 5
20 '
30 MEMORY &7FFF
40 addr=&8000
50 FOR ln=1000 TO 1350 STEP 10
60   READ bigdata$,checksum
80   checkall=checkall+checksum
90   FOR pointer=1 TO 16 STEP 2
100     byte$=MID$(bigdata$,pointer,2)
110     c$=MID$(byte$,1,1):GOSUB 210:c$=
    MID$(byte$,2,1):GOSUB 210
120     result=VAL("&"+byte$)
130     POKE addr,result
140     addr=addr+1
150     checksum=checksum-result
160 NEXT pointer
170 IF checksum<>0 THEN PRINT"CHECKSUM E
    RROR IN LINE";ln,bigdata$:STOP
180 NEXT ln
190 IF checkall=21122 THEN SAVE"mania5",
    b,&8000,&11F ELSE PRINT"Incorrect nu
    mber of data lines"
```

```
200 STOP
210 IF INSTR("0123456789ABCDEF",UPPER$(c
    $))=0 THEN PRINT"Typing error in lin
    e";ln,bigdata$ :STOP:ELSE RETURN
220 '
230 '
1000 DATA 7E42427E46464242, 656
1010 DATA 7E46467C4466667E, 788
1020 DATA 7E4240404060627E, 704
1030 DATA 7C4642424262667C, 716
1040 DATA 7E40407C4060607E, 760
1050 DATA 7E40407840406060, 694
1060 DATA 7E404040 4E62627E, 718
1070 DATA 4242427E42426262, 652
1080 DATA 3E08080808181 83E, 204
1090 DATA 7E08080808181878, 326
1100 DATA 464C587070586C66, 756
1110 DATA 404040404060607E, 638
1120 DATA 66665A5A42426262, 712
1130 DATA 626252524A4A6666, 712
1140 DATA 7E4242426262627E, 744
1150 DATA 7E42427E60604040, 704
```

```
1160 DATA 7E4242424A6C667A, 730
1170 DATA 7E42427E584C6662, 748
1180 DATA 7E40407E0206067E, 520
1190 DATA 7E18181808080808, 230
1200 DATA 424242426262627E, 684
1210 DATA 4242426262663C18, 580
1220 DATA 626262425A5A6666, 744
1230 DATA 4266243C3C246662, 560
1240 DATA 4242663C18180808, 358
1250 DATA 7E02060C1830667E, 446
1260 DATA 7E464E5A7266467E, 776
1270 DATA 183808080818187E, 278
1280 DATA 7E02027E4060607E, 638
1290 DATA 7E02023E0206067E, 332
1300 DATA 4048487E18180808, 398
1310 DATA 7E40407E0206467E, 584
1320 DATA 4040407E4262627E, 706
1330 DATA 7E02060C08081818, 210
1340 DATA 7E42427E4246467E, 716
1350 DATA 7E42427E06060202, 400
```

```
10 ' space mania listing 6
20 '
30 MEMORY &7FFF
40 addr=&8000
50 FOR ln=1000 TO 1350 STEP 10
60   READ bigdata$,checksum
80   checkall=checkall+checksum
90   FOR pointer=1 TO 16 STEP 2
100     byte$=MID$(bigdata$,pointer,2)
110     c$=MID$(byte$,1,1):GOSUB 210:c$=
    MID$(byte$,2,1):GOSUB 210
120     result=VAL("&"+byte$)
130     POKE addr,result
140     addr=addr+1
```

```
150     checksum=checksum-result
160 NEXT pointer
170 IF checksum<>0 THEN PRINT"CHECKSUM E
    RROR IN LINE";ln,bigdata$:STOP
180 NEXT ln
190 IF checkall=21122 THEN SAVE"mania6",
    b,&8000,&11F ELSE PRINT"Incorrect nu
    mber of data lines"
200 STOP
210 IF INSTR("0123456789ABCDEF",UPPER$(c
    $))=0 THEN PRINT"Typing error in lin
    e";ln,bigdata$ :STOP:ELSE RETURN
220 '
230 '
1000 DATA 7E42427E46464242, 656
1010 DATA 7E46467C4466667E, 788
1020 DATA 7E4240404060627E, 704
1030 DATA 7C4642424262667C, 716
1040 DATA 7E40407C4060607E, 760
1050 DATA 7E40407840406060, 694
1060 DATA 7E4040404E62627E, 718
1070 DATA 4242427E42426262, 652
1080 DATA 3E0808080818183E, 204
1090 DATA 7E08080808181878, 326
1100 DATA 464C587070586C66, 756
1110 DATA 404040404060607E, 638
1120 DATA 66665A5A42426262, 712
1130 DATA 626252524A4A6666, 712
1140 DATA 7E4242426262627E, 744
1150 DATA 7E42427E60604040, 704
1160 DATA 7E4242424A6C667A, 730
1170 DATA 7E42427E584C6662, 748
1180 DATA 7E40407E0206067E, 520
1190 DATA 7E18181808080808, 230
1200 DATA 424242426262627E, 684
1210 DATA 4242426262663C18, 580
1220 DATA 626262425A5A6666, 744
1230 DATA 4266243C3C246662, 560
1240 DATA 4242663C18180808, 358
1250 DATA 7E02060C1830667E, 446
1260 DATA 7E464E5A7266467E, 776
1270 DATA 183808080818187E, 278
1280 DATA 7E02027E4060607E, 638
1290 DATA 7E02023E0206067E, 332
1300 DATA 4048487E18180808, 398
1310 DATA 7E40407E0206467E, 584
1320 DATA 4040407E4262627E, 706
1330 DATA 7E02060C08081818, 210
1340 DATA 7E42427E4246467E, 716
1350 DATA 7E42427E06060202, 400
```

```
10 ' space mania listing 7
20 '
30  MEMORY &7FFF
40 addr=&8000
50 FOR ln=1000 TO 9140 STEP 10
60   READ bigdata$,checksum
80   checkall=checkall+checksum
90   FOR pointer=1 TO 16 STEP 2
100     byte$=MID$(bigdata$,pointer,2)
110     c$=MID$(byte$,1,1):GOSUB 210:c$=
  MID$(byte$,2,1):GOSUB 210
120     result=VAL("&"+byte$)
130     POKE addr,result
140     addr=addr+1
150     checksum=checksum-result
160 NEXT pointer
170 IF checksum<>0 THEN PRINT"CHECKSUM E
   RROR IN LINE";ln,bigdata$:STOP
180 NEXT ln
190 IF checkall=707597 THEN SAVE"mania7"
   ,b,&8000,&197F ELSE PRINT"Incorrect
   number of data lines"
200 STOP
210 IF INSTR("0123456789ABCDEF",UPPER$(c
   $))=0 THEN PRINT"Typing error in lin
   e";ln,bigdata$ :STOP:ELSE RETURN
220 '
```

```
230 '
1000 DATA CDA7BC2182862273, 1006
1010 DATA 8621898622758621, 756
1020 DATA 8A86227786219186, 871
1030 DATA 226C8621D186226E, 796
1040 DATA 8621D586227086C3, 989
1050 DATA 2A853E012A7386CD, 734
1060 DATA BCBC3E022A7586CD, 938
1070 DATA BCBC3E032A7786CD, 941
1080 DATA BCBC2A6C86225C86, 920
1090 DATA 2A6E86225E862A70, 702
1100 DATA 8622608621000022, 465
1110 DATA 6486226686226886, 776
1120 DATA C92A5C86225A862A, 769
1130 DATA 64862262862A6C86, 784
1140 DATA 226A863E01327986, 642
1150 DATA 3272863E01327A86, 667
1160 DATA CDEC852A5A86225C, 966
1170 DATA 862A62862264862A, 718
1180 DATA 5E86225A862A6686, 764
1190 DATA 2262862A6E86226A, 692
1200 DATA 863E023279863272, 667
1210 DATA 863E02327A86CDEC, 945
1220 DATA 852A5A86225E862A, 703
1230 DATA 62862266862A6086, 774
1240 DATA 225A862A68862262, 670
```

```
1250 DATA 862A7086226A863E, 758
1260 DATA 043279863272863E, 669
1270 DATA 03327A86CDEC852A, 925
1280 DATA 5A86226086 2A6286, 762
1290 DATA 226886C93A7286CD, 984
1300 DATA ADBCE607C82A5A86, 1064
1310 DATA 225786CD5686ED4B, 992
1320 DATA 628609545D4E2346, 601
1330 DATA CB78282221000022, 464
1340 DATA 62862A5A86232322, 602
1350 DATA 5A86225786CD5686, 904
1360 DATA 7CB5C2F5852A6A86, 1159
1370 DATA 225A86C3F585DD21, 1085
1380 DATA 7986DD7103DD7004, 929
1390 DATA 626B23234E2346DD, 679
1400 DATA 7107DD7008217986, 749
1410 DATA CDAABC2A62862323, 907
1420 DATA 2323226286C92AD1, 788
1430 DATA 86C9D7869786D186, 1312
1440 DATA D786040004000400, 361
```

```
1450 DATA 0400D5869186D186, 973
1460 DATA D58604828689868A, 1024
1470 DATA 8604030000000000, 141
1480 DATA 010002000C010CFF, 283
1490 DATA 140002000F0105FF, 298
1500 DATA 0561876787718767, 826
1510 DATA 87778767877D8783, 1018
1520 DATA 878D878D87B387BD, 1190
1530 DATA 87B387C387B387C9, 1294
1540 DATA 87CF87D987E387D9, 1408
1550 DATA 87F187D987FF8761, 1350
1560 DATA 8767877187678777, 978
```

```
1570 DATA 8767877D87158800, 790
1580 DATA 00378800003D8857, 475
1590 DATA 883D8869883D8857, 858
1600 DATA 883D8869883D8857, 858
1610 DATA 883D8869883D8857, 858
1620 DATA 883D8869883D8857, 858
1630 DATA 883D8869883D8857, 858
1640 DATA 883D8869883D8857, 858
1650 DATA 883D8869883D8857, 858
1660 DATA 883D8869883D8857, 858
1670 DATA 883D8869883D8857, 858
1680 DATA 883D887B888D88A7, 1036
1690 DATA 888D88B9888D88CB, 1214
1700 DATA 883D8857883D8869, 858
1710 DATA 883D8857883D8869, 858
1720 DATA 883D8857883D8869, 858
1730 DATA 883D8857883D8869, 858
1740 DATA 883D8857883D8869, 858
```

```
1750 DATA 883D885788ED8800, 929
1760 DATA 000000A005FFFF43, 742
1770 DATA 00120050001200FF, 371
1780 DATA FF6A0090000FFFF71, 1128
1790 DATA 009000FFFF770090, 917
1800 DATA 00FFFF7700120077, 766
1810 DATA 00A200FFFF500036, 806
1820 DATA 0050003600430024, 237
1830 DATA 003C002400500036, 230
1840 DATA 0050003600590012, 241
1850 DATA 0054001200500024, 218
1860 DATA 00FFFF2200120028, 602
1870 DATA 001200FFFF150090, 693
1880 DATA 00FFFF16009000FF, 931
1890 DATA FF18009000FFFF19, 958
1900 DATA 0012001B00A200FF, 462
1910 DATA FFC9001200EF0012, 731
1920 DATA 00FFFF3F0124003F, 673
1930 DATA 0124003F014800FF, 428
1940 DATA FF520124003F0124, 474
1950 DATA 0052014800FFFF66, 767
1960 DATA 0124003F01240066, 239
1970 DATA 0148009201120066, 340
1980 DATA 01A200FFFF640012, 791
1990 DATA 006A0024008E0036, 338
2000 DATA 0086002400770024, 325
2010 DATA 008E006C00590012, 357
2020 DATA 005000EA00FFFF00, 824
2030 DATA 000100FFFFFC0412, 785
2040 DATA 007E021200FC0412, 420
2050 DATA 00FC0412007E0212, 420
2060 DATA 00FC041200FFFF31, 833
2070 DATA 04120018021200BC, 254
2080 DATA 031200DE011200FF, 517
2090 DATA FF98051200CC0212, 654
2100 DATA 0047051200A40212, 278
2110 DATA 00FFFF3104120018, 605
2120 DATA 021200F4031200FA, 535
2130 DATA 011200FFFFBC0312, 738
2140 DATA 00DE011200BC0312, 450
2150 DATA 007E0212003F0112, 228
```

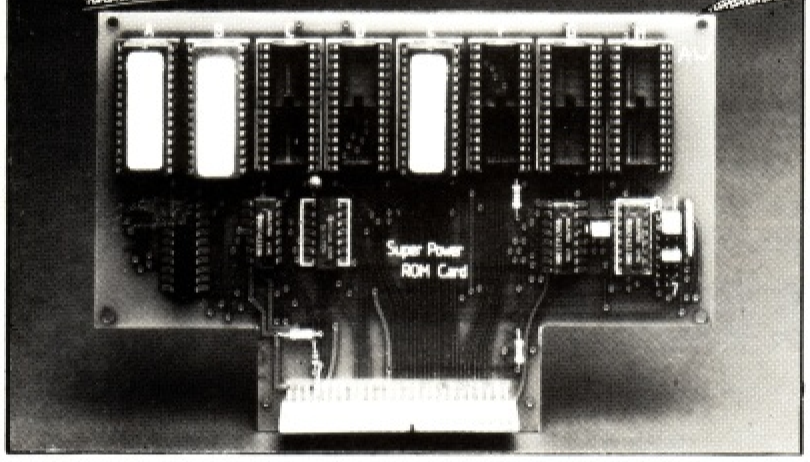
```
2160 DATA 007E021200FFFF52, 738
2170 DATA 011200A40212007E, 329
2180 DATA 021200FC041200FF, 549
2190 DATA FF66011200CC0212, 600
2200 DATA 007E021200FC0412, 420
2210 DATA 00FFFF9201120024, 711
2220 DATA 0312007E021200FC, 419
2230 DATA 041200BC033600BC, 455
2240 DATA 0336002403240 0CC, 336
2250 DATA 022400FFFF530336, 688
2260 DATA 0053033600240324, 215
```

```
2270 DATA 00CC02240053036C, 436
2280 DATA 005A0212008603EA, 481
2290 DATA 00FFFF00FFFF5303, 1106
2300 DATA 0000000000000000, 0
2310 DATA 0000000000000000, 0
2320 DATA 0000000000000000, 0
2330 DATA 0000000000000000, 0
2340 DATA 0000000000000000, 0
2350 DATA 0000000000000000, 0
2360 DATA 0000000000000000, 0
2370 DATA 0000000000000000, 0
2380 DATA C355891816ED7324, 851
2390 DATA 9FCDE089CD8E97DD, 1444
2400 DATA 364900DD365D0006, 501
2410 DATA 05211A9F36002310, 328
2420 DATA FBDD360003CD1C98, 914
2430 DATA CD9C97FE63285C32, 1047
2440 DATA 209FCD89993E44CD, 1021
2450 DATA 1EBBC44A993A499F, 930
2460 DATA E6032005CD909B18, 798
2470 DATA DCCD5F8AA72811FE, 1136
2480 DATA 0220D23A009F3D32, 572
2490 DATA 009FFEFF20D41800, 936
2500 DATA CD8F93CDBC8E0100, 1031
2510 DATA 00CD38BCCD7195CD, 1121
```

```
2520 DATA A5961898ED7B249F, 1046
2530 DATA CDA7BC210101CD75, 917
2540 DATA BBCDBC8E21F28ECD, 1344
2550 DATA DDBCC9CD599E18D0, 1294
2560 DATA 3E00CD0EBC3E00CD, 736
2570 DATA 96BBCD0085DD2100, 929
2580 DATA 9FCD1855DD3623FF, 1038
2590 DATA DD362900DD362C00, 635
2600 DATA CD6792CDE68EC9DD, 1453
2610 DATA 361F00DD360F00DD, 596
2620 DATA 362AFF010B0BCD38, 635
2630 DATA BCDD363400C9DD36, 991
2640 DATA 0E00DD360D002100, 335
2650 DATA 20220B9FC9CD14BC, 850
2660 DATA 21F401223F9F2100, 567
2670 DATA 2436FFCDF491DD36, 1214
2680 DATA 2D6421039622539F, 607
2690 DATA 015005ED43089FED, 794
2700 DATA 43059F3E26320A9F, 550
2710 DATA 32079FCDA556C9DD, 1094
2720 DATA 21009FCD7791CDC6, 1064
2730 DATA 9121000011000022, 229
2740 DATA 599FCD10BDCD078A, 1008
2750 DATA CD1E8ACDFF8FCD5F, 1276
2760 DATA 91CD249BCDF59D3A, 1206
2770 DATA 0A9FED4B089FCDA5, 1018
2780 DATA 56CD629BA7CCA28B, 1216
2790 DATA CDC18CCD1395CB73, 1229
2800 DATA C22D8BCDCD8DCD1F, 1165
2810 DATA 8ECD498DCD19BDCD, 1185
2820 DATA 5A8F3A0F9FFE0128, 760
2830 DATA 083A1F9FFE09D4A2, 893
```

ACU

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GRAPHICS COMMANDS — Circle, Turtle.
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FILE COMMANDS — Baud; Info; Unprotect.
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Make A noise

If there is one thing which has been under exploited on the Amstrad it is sound. Now there is no excuse for not letting Arnold join your band. Cheetah Marketing, the only people with a political advertisement for joysticks, have converted their very successful Specdrum for the Amstrad.

The Cheetah Amdrum uses a special set of chips which allow it to emulate a digital drum machine. The device costs £34.95 but six Amstrad computer users are going to get one free. It's not quite that easy – almost but not quite. You need to answer three questions first.

1. What is Simon Le Bon's boat called?
   a. Titanic b. HMS Ark Royal c. Drum
2. Who was the drummer on Phil Collins' solo album?
   a. The Prime Minister b. Nancy Reagan c. Phil Collins
3. Which of these things can't you eat?
   a. A cake b. A bread roll c. A drum roll

RULES

1. The winners will be the first six correct entries drawn on Monday, July 28, 1986.
2. You may photocopy the form but only one entry is allowed per reader.
3. The judge's decision is final. No employees of *Amstrad User* may enter.

AMDRUM CONTEST ENTRY FORM

Answer 1 ____________________

Answer 2 ____________________

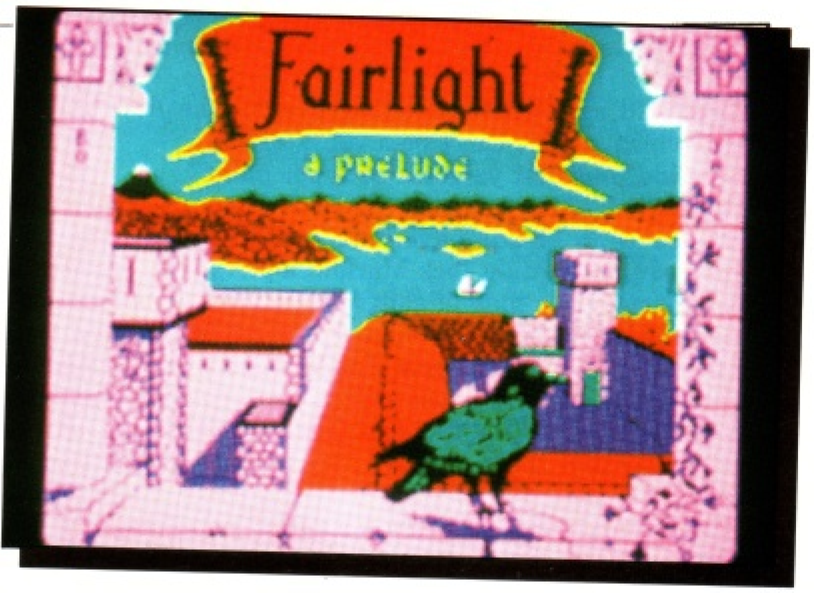
Answer 3 ____________________

Name ____________________

Address ____________________

Send your entry to: Amdrum Contest, Amstrad Computer User, 169 King's Road, Brentwood, Essex CM14 4EF.

FAIRLIGHT



I have been misguided. I thought Fairlight meant 20 grand's worth of highly desirable musical machinery. Fairlight the game has absolutely nothing to do with this. It is a 3D adventure after the tradition first started by Knightlore.

However the adventure side of things plays a greater part in Fairlight. The puzzles are a bit more convoluted than working out how to get over a wall or past a spikey ball. It is actually possible to carry bits of furniture about, such as stools and barrels, as well as smaller objects, such as keys and food. There is a limit to the weight you can carry, though, and it is never possible to have more than five objects.

The game is set in a medieval castle and your little man bears a close resemblance to one of the knights of the round table in his little suit of armour. Initially you start in a courtyard where a door leads to stairs that go up to the battlements. Pushing one of the keys on the keyboard enables you to jump up the stairs or on to other objects. The use of the fire button is reserved for fighting. This is a bit of a strange choice as I found myself doing a lot more jumping than fighting.

Once up on the battlements you get your first chance to wield the sword as you have to get past the guard there. Hitting him enough times with your sword will leave just his helmet which it is actually possible for you to pick up. The idea, I guess, is that all the guards could be collected and put away in a room out of your way. Across the battlements you get inside the castle where a flight of stairs leads down and doors lead off to other rooms.

As you walk through the corridors you may find other guards or doors that are locked. Looking in rooms nearby you will probably find a key lying on a table or on a shelf, though it will no doubt be necessary to take on a guard or two before you can get to it. Picking up food from the table and useing it boosts your life value which starts at 99 but counts down each time you are attacked by a guard.

As well as the normal guards there are also huge soap bubbles (I'm sure there is a perfectly plausible reason why they should be found in a castle in the dark ages!). These too are not good for the health. There are also large ogres who put up a pretty stiff fight and ghostly characters who cannot be killed by the sword – though I'm sure the crucifix that is to be found must play a part in their downfall.

To sum-up I would recommend the game even if you don't get great hoots of hi-tech musical hardware in the package.

Author: The Edge.
Price: £8.95.

Colin

Another game out of the Knightlore mould but with enough interesting differences to make it quite playable, even for someone who already has examples of this type. This game is certainly nearer to a hybrid arcade/adventure than many that have gone before. Until I found the infinite lives POKE I did find that I was getting killed a bit more often than I would have liked, but having got the hang of it I must say it certainly grows on you. But the graphics are a bit of a disappointment. Mode 1 doesn't mean you have to make a drab colour choice and it should allow plenty of pixel accurate detail which seems to be a bit lacking in a lot of the objects/characters of the game. Keys, for instance, are quite pathetic and could be easily missed until you know what you are looking for. However it is the adventure/puzzle element of the game that makes it interesting.

12/20

Liz

My view of Fairlight was coloured by the hype surrounding its release on the Spectrum. For months before the program was launched there were advertisements claiming that this was the best program ever. Now I think that it should be expected that software houses blow their own trumpets but in this case I feel it has backfired. I was expecting something mind-blowing and when the program appeared and was merely good I was disappointed.

Looking at Fairlight after seeing Batman didn't help things.

7/20

Nigel

The thing I really hate about Ultimate games is that there are always far too many things to bump into that kill you. Fairlight doesn't quite have the polish of an Ultimate game – being a trifle slower with less sophisticated graphics and problems – but this just makes it that bit easier for a clumsy idiot like me to play.

Fairlight does have a few of the same touches of humour arising out of standing on unlikely objects, and you certainly get a feeling of becoming involved. Yes, arcade adventures have come a long way over the past few years. A year ago Fairlight would have been hailed as a masterpiece but now it is overshadowed by a number of better games more thoroughly programmed. There are adventure games which give more interesting challenges and there are better graphic games too. This is a mixture of both that a lot of people would find quite satisfying.

If the fantasy adventure – where you explore lots of screens – is your preference then Fairlight is for you.

9/20

MOVIE



"Listen kid, stick wid me and I'll get ya into the movies".
"Gee whizz mister, can I be a gangster?"
"Sure kid, but first ya gotta be a pot plant".
"Huh???!"

Movie is an arcade adventure from Imagine Software in which you must guide Jack Marlow, a private eye, around the headquarters of a mob of gangsters. Jack must locate a tape recording, held inside the office of "Bugs" Malloy and return to his office to play it back. The gangsters' office is heavily guarded and Marlow must seek help to find his way there. There are items dotted around the complex that can help him on his way and these can be picked up, moved around and used.

The game starts in Marlow's office populated by filing cabinets, desks, chairs, pot plants, a tape recorder and Marlow himself. You move the detective around by using the joystick. There are two methods of movement you can select – rotate left and right and move in the direction of the joystick. Pressing the fire button changes from moving Marlow to moving an icon cursor at the bottom of the screen. Using this, you can select an option. There are options to pick up objects, put down objects, select a different object, shoot – if the gun is in your possession and selected – walk, talk, punch, throw an object, pause the game and quit.

Using the walk option you can freely move around the complex. The various screens are drawn in 3D, corner on, similar in style to an Ultimate game. Each room you enter is furnished with a number of items, some movable, others removable with the remainder immovable. *(Cut the poetry – Ed).* Among the radios, stuffed animal heads, clocks and armchairs you will find useful objects like the pistol. As well as pot plants you'll meet heavies. These can be talked to, punched or shot. You will also meet Vanya or Tanya, a pair of identical twins – one good the other evil – who will either help you or introduce you to the benefits of precast footware. Tanya is the key to the whole game as, without her help, you won't make it to Bugs' office.

There are various tests and puzzles to be solved in the game. In fact it will take you many hours to map it and get to the end. All I can say is good luck!

Author: Imagine
Price: £8.95

Nigel

A different sort of arcade adventure, this. The 3D corner-on approach is one of my least favourite because it makes a game so difficult to control. Luckily this game doesn't have a very fast pace, making speed of reactions less critical. I enjoyed some of the problems to solve, but overall I am not very keen on Movie. Games need a bit of sparkle and excitement to grab your attention and Movie seems a trifle dull in this respect. Certainly an original game with some nice features – talking to the characters, throwing objects, for instance – but not my cup of tea.

9/20

Colin

There's going to come a day when everyone gets absolutely pig sick of the Knightlore-style 3D game but I still remain a great fan of the idea. Casting the main character of an arcade adventure as a Marlow-type of forties sleuth/gangster also seems like quite a good idea. I don't know, then, why I didn't find Movie particularly interesting.

The speed at which your rain-coated character moves does tend to take something away from the action. Also, the inability to both move and retain the option to pick things up also makes control a bit trickier than it need have been. When I first played the game I thought: "Icons – great. I won't need to read the instructions. It will all be plain sailing from here". Wrong again, maestro. Without reading the instructions I would never have guessed what half the icons were used for, which rather defeats the whole point of using them in the first place.

Having said all that, I still think the game is worth looking at especially if you haven't already got a cupboard full of Knightlore lookalikes.

16/20

Liz

Imagine has produced some of the best Amstrad software around, like Yie Ar Kung Fu and Ping Pong but Movie does not break any new ground. What it does do is take a whole load of existing techniques and refine them. I have to admit to not getting very far in finding the missing tape but was enchanted by the characters in the game.

Some of the colours are a bit murky although the Mode 1 graphics are very good. Perhaps using three shades of the same colour would have helped the black and white feel of the game. The people within the game are very well animated but this means they move slowly (perhaps the projector needs winding). Objects which can be picked up are very few and far between.

The keyboard response when talking is very slow – and how come characters talking to you can punctuate properly and you are only allowed a full stop? In a leaner month Movie would have been something special but when there are games like Tomahawk, Turbo Esprit, Bomb Jack and Equinox about, Movie becomes just another good game.

17/20

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SIREN SOFTWARE



EQUINOX

Mikro-Gen are famed for their Wally games. They went for a brief diversion with the excellent but under-rated Battle of the Planets but other than that they are best at sprites. Please note that the screen shots are from a pre-release version – the final program will not have room numbers in the top right hand corner.

Equinox is a space game where you control a floating orb which can be piloted around a complex of caves. Your job is to collect eight radioactive containers and put them in an isolation chamber. Each container lives on a separate level and has to be collected and dropped down a disposal chute. This is a bit odd in the first level where you could just take the canister to the chamber but on the other levels it seems to make sense.

The game is like a cross between Sorcery and a Wally game. The puzzles are not as contrived as those in the Wally games and you get to shoot things.

There are 128 rooms – each with quite a lot of detail – and the sprites are very detailed as are some of the objects. This must mean that the programmers were pushed for space and had to leave out a high score table. It is a shame that they went to the extent of leaving out a best score so-far.

Whenever a game has a background tune reviewers complain and players invariably turn it off. If the game has no music it is accused of being a cop-out. Equinox reaches a compromise – it has a good tune which only plays in demo mode, which also means that you can leave the game loading and go and make a cup of tea. Once the program is in the tune summons you. By doing this you miss the beautiful loading screen (see the front cover).

To get the canister to the chute and then make your way to the next level entails a lot of object shuffling. Much of this is due to the way the teleport transporters work. To use a teleport you need to pay it. This then credits you with a two-way ticket between that teleport and the one connected to it. If you only use it one way and then fly through the maze to get back you can go round for another go using your remaining credit.

This type of gambit is necessary since there are some one way trap doors through the floor and magnetic lifts which draw you up. The teleporter only accepts one currency, a coin which looks more like something you would find in a Christmas cracker. These are very rare so teleporters should be used sparingly. If you run out of money you can sacrifice a life for an extra coin. The money machine will accept your life even if it is the last of your three. This, not surprisingly, ends the game.

The Mode 0 graphics use shades to make even the smallest object look realistic. For extra points you can shoot at the aliens which inhabit the caves. The radiation from the canisters has made them very nasty – if you touch one of the beasts for too long it will kill you. This is an odd way of getting killed and there is no power meter to tell you that you are close to dying.

All the objects are valuable. Oil drums top-up your fuel and if you run out you are grounded. Batteries replenish your laser. Not being able to shoot isn't too bad as you can play the whole game without shooting anything but running out of fuel is fatal unless there is an oil drum at the bottom of the drop.

I hope that Equinox reflects the standard of future Mikro-Gen games. It certainly proves that they have not got stuck in a rut with the Wally series. There will be one more program featuring Wally and Wilma but after that the cloth cap will be hung up for good.

Author: Mikro-Gen.
Price: Cassette £9.95. Disc £14.95.

Liz

I found the orb a little difficult to control at first because it bounces and oversteers. Using a downward movement on the joystick to pick up and use things is novel but takes some getting used to. As a puzzle freak I really liked this game. It is a bit – well, a lot – like Sorcery but is not a rip-off. The tasks are very different and you can shoot anything with the one laser.

I found working out what to do with the objects very much easier than in the Wally games. It is simple to deduce that you shift rocks with dynamite and open doors with keys. Keeping track of where you are is essential as your time is limited.

18/20

Nigel

Equinox is one of the better games we've seen this month. It looks a little like Sorcery but has much more zapping. The graphics are colourful and have depth – as they should be on the Amstrad – indicating that the game probably originates on this machine.

The puzzles are challenging and well designed giving the impression that a lot of effort has been put into writing the game. My only quibble is that it seems to take a long time to get into the game. I started by losing lives very quickly. I carried on by losing lives very quickly and now that I can play the game quite well, I lose lives very quickly indeed.

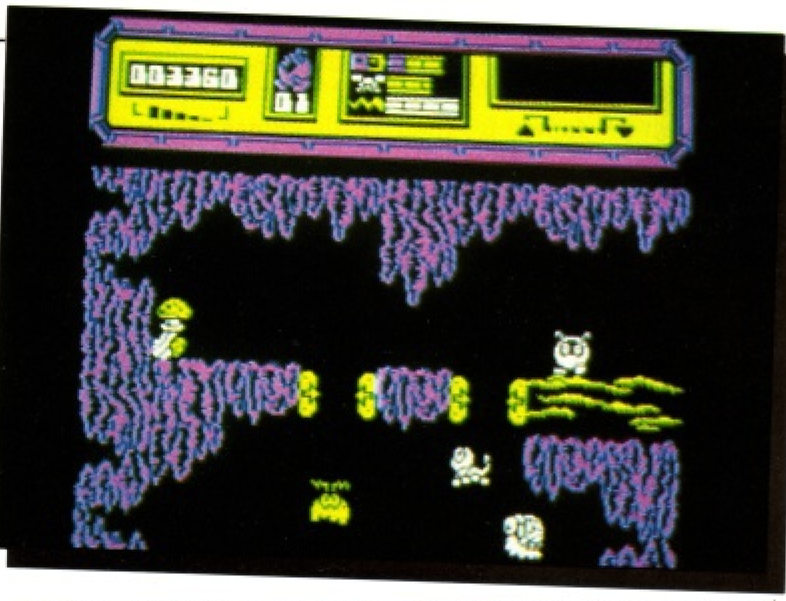
16/20

Colin

Once I knew what I was doing Sorcery, sorry I mean Equinox, was much easier. Juggling all the objects is very confusing. Rooms with a lot of machinery in them are much more dangerous than empty rooms because it is more difficult to run away from the aliens.

I found getting into the game quite hard going and if I wasn't reviewing it I'm not sure I would have bothered. That would have been a shame because now I'm hooked.

17/20



STARQUAKE

The latest release from Bubble Bus could well do a world of good for its image. Starquake is very Ultimatesque in appearance and seems to have plenty of polish and some nice touches like the old style Ultimate games, Atic Atak and Sabre Wulf. With a promise of 500 screens there should also be plenty to do and see.

The loading screen has a rather familiar "squiggly" border and a good backing tune so the whole thing can't help but remind you of Ultimate. The main menu allows all sorts of options for keyboard or joystick use, including the ability to redefine keys. The rather unhelpful rubric on the cassette inlay mumbles on about planets likely to explode and how you're the last hope for humanity (blobity, actually, as your character is a blob). There is also a list of features entitled "Galaxy A-Z" which quite definitely is not in A-Z order! But there's no real idea of just what you are supposed to be doing.

Starting the game sets our hero on the surface of the planet next to the remains of his spacecraft. Moving to the left allows him to fall into the planet passing through many screens littered with baddies whose contact means depletion of energy.

Three bar graphs give an idea of energy, fire power and ability to lay bridging platforms. A bridging platform is a temporary block you can stand on to get across a gap without falling further towards the centre of the planet. The other method of avoiding the effects of gravity is to fall on to one of the pads where you can become attached to a sort of floating platform. The drawback of doing this is that you are no longer able to pick up one of the major objects of the game.

There are floating platform parking lots dotted about that enable you to get off if necessary. Also lying about are various types of packs that boost one of the three attributes mentioned above. There are also little joysticks that give another life – you start with five.

To try to dissuade the baddies from bumping into you, you are armed with a gun that shoots zig-zag laser bolts. Sometimes the rather unordered nasties turn into rather static but quite deadly objects looking like hi-tech cotton reels.

The objects that can be picked up within the huge cave system are a funny collection – fire extinguishers, Access cards and crossbows, among others. Exactly what you can do with them once you've got them I have yet to figure out but I guess that's the idea of the game. The final aim is to collect all the parts of a reactor-like thing and assemble them in a central place.

Things I have worked out how to use include the teleports. Each has a five letter code and it's a good idea to note them down so you can easily hop about the place. Without knowing the destination codes you won't get very far.

Author: Bubble Bus
Price: £7.95.

Colin

OK, I'll admit that I'm an illiterate dingbat but am I missing something? Am I really supposed to know what the hell I'm meant to be doing based on the information given on the inlay? While the game has some marked similarities to the style of Ultimate the one thing it doesn't give is sufficient clues about what you are supposed to do. Although Ultimate buried it in cryptic poetry, at least there was a clue somewhere. The game itself looks great and is in Mode 1 which is my own preference. There are plenty of imaginative sprite designs and the room layout and design is also full of thought for detail.

If I had many hours to spend trying to figure it out I could well get to like this game but the instructions are a bit of a non-starter. My highest score to date is about 25,000 with 11 per cent of the adventure completed – but I don't really know what I did to get that!

14/20

Liz

Starquake is very similar to the underrated Obsidian from Artic. This likeness is exacerbated by the single colour sprites and the space setting. The lack of colour does not extend to the backgrounds and fauna – some of the settings are really very pretty.

Your little spaceman (blob) is cute. The game is very big and also very hard. Once you get used to flying about on the hover pad it becomes very difficult to get by without it. Half the trick of the game is using the little platforms to hop short distances.

There are hover pad landing points near every item of value so seeing one of these points is a dead giveaway. You should shoot around until you see the goody then land and get it. Starquake is a game which will take a long time to conquer and while not technically brilliant it is very playable.

16/20

Nigel

At first glance Starquake is not worth a second glance. However a little perseverence reveals a game of real quality. Monochromatic sprites *(Nigel gets this month's prize for using the biggest words – Ed)* similar to the style of Ultimate's games are used to provide a very clear image.

The game is basically a wander round the screens getting the objects and solving the puzzles game. But all these types of games are judged by the design of their screens and the best have puzzles that can only be solved by knowing the layout of the game.

Starquake is that type, and each time you play it you learn a bit more to get you a bit further. Not many points for originality but plenty for simple quality and polish. I like it.

18/20

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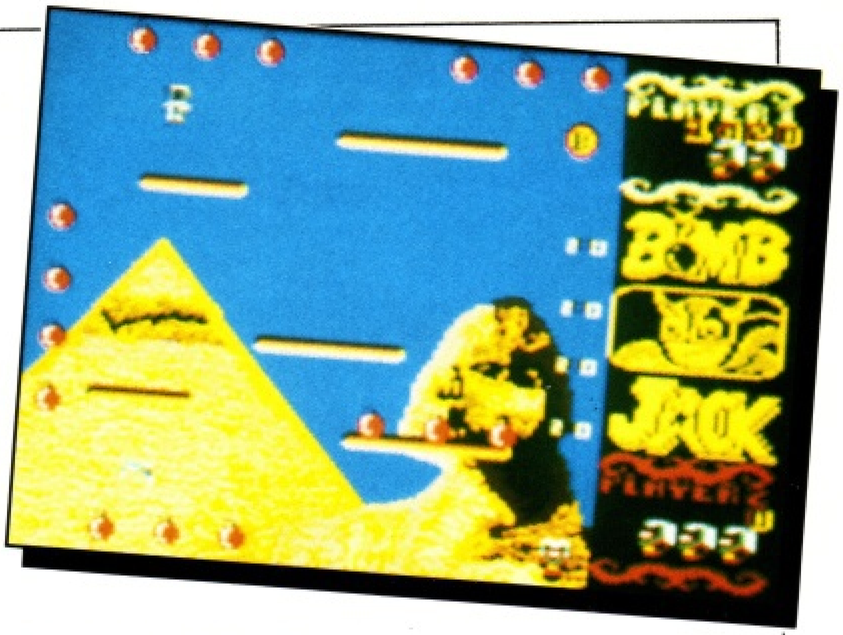
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BOMB JACK



Amusement machines usually have quite a short life, at least they do in London. In Southend old machines never die, they just move from arcade to arcade. A game which hangs about in The Smoke must be good, it will only occupy the valuable floor space if it is earning its keep. Bomb Jack machines are still to be found in the West End so they must be popular and so Bomb Jack must be a good game.

What matters is how good a conversion the Amstrad game is. The good news is that Elite have done an excellent job. For those of you who haven't seen the arcade machine, you play the part of a little man, a sprite which looks all the world like the cartoon character Mighty Mouse. You have to walk around the screen collecting bombs and avoiding a weird collection of aliens.

Thinking about the game, Bomb Jack is a kind of Pacman with gravity. Your man falls to the bottom of the screen. You need to jump to get back up. You can hover by pounding the fire button in a sort of flapping action. This doesn't quite last long enough for you to get from one side of the screen to the other. You can control how high you jump by using the fire or jump button. Pressing once sends you skywards, pressing again stops you from going all the way to the top.

There is no attempt to get this game to make sense. The bombs don't even blow up. You have to collect all 23 bombs while dodging the nasties. There is no time limit, but as you play the number of aliens increases. To counter this some special bonuses appear. One is a flashing P, which freezes the baddies and allows you to kill them. I suppose that this is the Bomb Jack equivalent of the power pills in Pacman.

Perhaps the P stands for "Pacu" the Japanese word for eat and is one of the reasons given for the name Pacman. The other theory is that the game was named after Alfred Packer, an American cannibal. But all this is by the by.

In addition to the Ps there are Bs which award you bonus points and Es which give you an extra man. These tumble around the screen at random intervals.

Part of the skill in Pacman was learning a pattern which guaranteed that you would clear the screen. The same is true of Bomb Jack but learning the pattern is made easier by the bombs sparking. The fuse on a new bomb starts to flash as you pick up the last sparking bomb. If you collect all the bombs in the sparking order you win a 50,000 point bonus. Missing one bomb merits 30,000 points and two bombs missed still gets you 20,000.

The simple game is made more interesting by a variety of backdrops. You start with a Sphinx and pyramid behind you, then a Germanic castle followed by a Japanese city and finally a field.

The scenes cycle as do the layouts for the bombs and platforms. The backdrop does not affect the game, it is the pattern of the bombs which matters. If the enthusiasm with which Bomb Jack was met in the Amstrad User office is mirrored in the software shops throughout the country then Elite should have another number 1 on their hands.

Author: Elite Systems.
Price: £8.95.

Liz

I eagerly awaited the arrival of Amstrad Bomb Jack, I'd been warming up on the Spectrum version. Despite the attribute clash on that machine I loved the game. Before our review copy arrived I had been warned that the Amstrad version was not as good, all the same I hopped about the office with excitement when it turned up in the post.

My initial reaction was disappointment. For a start the program did not play the tunes that the arcade game produced. Among them Lady Maddona by the Beatles.

The sprites, particularly Bomb Jack himself were a bit ordinary and the joystick control was sluggish. This last problem was solved by trading in a very old Competition Pro for a Konix Speedking. Then I got hooked. If I failed to get the full bonus on the first screen I abandoned the game. This is the best yet from Elite.

18/20

Nigel

Great. Loved it. It didn't have boring bleeps which get on my nerves after $2\frac{1}{2}$ seconds, but just a few simple tones to let you know what's going on. As for the game itself, I found it both fun and addictive, with a slow increase in difficulty to keep things interesting.

I also liked the way you can either play to get as many points as possible going for the bombs in order, or you can play for as many sheets as possible, just getting as many bombs as fast as possible.

17/20

Colin

Why has this game been so successful on other machines and is destined to become so on Amstrad? In a word – addictiveness. This is one of the first games that has really inspired an inter-office championship to see who could make the highest score.

The concept is ludicrously simple, just jump about a screen and get the 20 odd bombs before one of the baddies gets you. I don't think that the pretty backdrops on each screen really have much to do with it either.

Once you get the hang of it you soon start to learn the correct order to get the bombs for each screen, ensuring a large bonus on each. The highest score so far stands at about 350,000, though I'm sure there are bound to be those who will beat this easily.

18/20

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TOMAHAWK

"OK Larry? Got the sandwiches and the orange squash?" "Yes, but are you sure this is wise Mr President?" "Oh sure Larry. The Army have got lot's of helicopters. They won't miss this one for a few hours. Remember the chocolate cookies?" "Yeah, but I'm concerned about the implications Mr President . . ." "Don't worry Larry, I'll clean my teeth later. Now what does this lever do?"

With a deafening roar the chopper soared into the sky. The artificial horizon lurched and digital readouts tumbled on the control panel. "Are you sure you can handle one of these things?" asked Larry as a tree zoomed past the cockpit window. "Sure I can Larry. Didn't you see me in 'Uncle Sam beats the Commies'."

"Wasn't the flying done by real pilots in that one sir?" "Say you may be right Larry. Doesn't the sky look green for this time of year".

If you were thrilled by Digital Integrations' Fighter Pilot you will be even more thrilled by Tomahawk. It is a realistic flight simulator based on the Apache advanced attack helicopter used by the US Army. It uses 3D graphics in real time, drawing trees, tanks, mountains, buildings and towers.

To become an effective player of Tomahawk, you must first master the helicopter controls, then learn the tactics of ground attack, finally using your acquired skills in a full scale battle in which you must clear the occupied territory of enemy forces.

There are many controls for this game, as there are with most flight simulators. But once you have taken off, most of the action is controlled by joystick. You have throttle, rudder and rotor controls, a key to select the next of the three types of weapon, another that displays a map, one that changes the mode of your doppler radar and yet another that selects the next target or beacon.

I can't vouch for how realistic the controls and displays are, but there is just the right compromise, including enough control to make the simulation seem realistic yet be easy enough for a complete wally like me to be able to fly the thing.

On screen the game is split into two, with most of the top part of the screen showing the view out of the cockpit window. Enemy tanks, field guns and buildings are shown in red, while your own boys are in blue. All the objects displayed are 3D wire

Colin

What you perhaps don't realise is that Tomahawk actually consists of two games. One a helicopter simulator and the other is called Lenslok. This means screwing your eyes up, no doubt doing irreparable damage, to try and make out two letters which must be typed in before the thing times out.

You only get three lives, and I got a little worried when I got to my third and still hadn't got off the first screen. It's worth persevering though, because the second game is brilliant if you manage to get that far. I've always fancied myself as a budding Noel Edmonds and would just love to have a go at the real thing. However £10 on a computer game seems like a more financially manageable substitute until Radio 1 signs me up.

Unlike the Durrell helicopter simulator, Combat Lynx, this one is quite flyable with only one pair of arms, two eyes and one brain (well half a brain then). The ground detail is excellent even if the mountains are see-through (hidden line removal would have been just a little bit much). Just fly low and have a look at the trees or the purple (?) hangar.

Don't be tempted to have to close a look at the other helicopters though, the detail may be good but they are flown by Japanese kamikaze pilots. The heat-seeking missiles are a real dream though they do make it a bit easier than I would have expected in the real world (however DI are known for the realism in their simulators).

Anyway I have just had my scramble orders so must dash. Hope to see you in the air soon (if you're not Japanese).

18/20

Liz

I doubt that anyone could top Tomahawk as a helicopter flying game. Combat Lynx may have been more accurate but this is FUN.

If you watch an experienced player you think that this is going to be really difficult, but when you sit down to play, joystick at the ready, you find that getting started is really quite easy. Going through the stages of flying, shooting and then planning a victory makes this an absorbing and rewarding game.

19/20

Nigel

Brilliant! Hours and hours and hours of fun blasting tanks, guns and helicopters. This is one of the best games I've seen for some time. After playing this for a while I feel competent to leap into a real Tomahawk, zoom off and bomb some Libyans. Surely it isn't this easy!

That's the thing about a good simulation, you get an impression of what it's like to fly a real aircraft. Tomahawk can be played at two levels one in which simple mastery of the controls allow you to 'zap the baddies', the other in which you learn to use the controls to the full and do some of the amazing flying you see on the telly all the time.

19/20



frame drawings drawn in scale, where trees will tower above you if you are at a lower height than the top.

The graphics are, as you might expect, fairly basic, with objects taking simple shapes. In the lower half of the screen there is a control panel display. On the left is the TADS display showing the target that that you are aiming for, and underneath this is the throttle, collective, torque and revs indicators.

In a helicopter it seems to be wise to keep the throttle wide open all the time leaving the collective as the only other important control. The collective lever adjusts the angle of the rotors giving greater or lesser lift. Once airborne, you push the nose down with the joystick, and the angle of the rotors propel you forwards. A lazy player (like me) can get away with adjusting the height and speed to be fairly constant and then just use the joystick to control the chopper.

The usual flight simulator displays are there – fuel, height, speed, vertical speed, heading along with engine temperature, direction you are facing (you could be going sideways), direction to target, time to target, missiles, rockets, bullets remaining, and of course score.

Damage to various systems is shown also. The map, which can be called up at any point during the game, shows you a large area in blue (indicating friendly) and red (enemy). Only when you have succeeded in turning all the red, blue, do you win.

Combat takes place against enemy interceptor helicopters and the various ground units. Any of three types of weapons can be selected. Machine guns, rockets and guided missiles. The guided missiles are great fun and take all the work out of blasting things to pieces but don't score as highly as the other weapons.

There are several modes and levels of play, just as there were in Fighter Pilot. The cloudbase can be altered, the type of mission, practice or combat also there is night flying using infra red vision as well as levels of difficulty.

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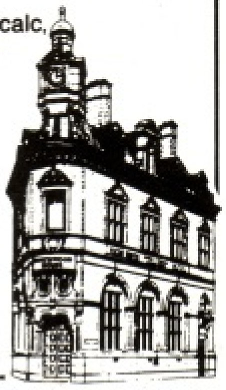
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TURBO ESPRIT



When computer games can take you into battle against alien hordes, put you in combat in the Orient, have you at the controls of a million pounds worth of aeroplane, or turn you into a one man fighting machine, what chance does a mere driving simulator have in offering the same excitement?

OK so this new game from Durrell puts you in the driving seat of one of the fastest cars on the road, and they've taken it to the James Bond workshop to have a machine gun fitted, but it still needs that something extra. In the case of Turbo Esprit that something extra is provided by a drugs ring.

There is an armoured supply car in town, which is fencing drugs to four delivery cars. You have to try and catch the criminals red handed as they pick up the goods and get them to surrender. When you have trapped all four delivery cars (they look more like vans to me) you can close in on the armoured car.

If you attack the big fish too early all the minnows escape. You can shoot the delivery cars but the supply car has to be rammed (64k?) to get the baddies to submit. It is best to practise ramming since that scores more points and shooting at the wrong car is far too easy.

To add a bit of spice there are some white hit cars which will try to run you off the road. These can be shot for extra points. There are two types of score, the real how-many-baddies-have-you-defeated variety and a second penalty score which shows how many innocent pedestrians and motorists you have run into.

The simulation is not so much about the mechanics of driving, there is no messing about with gears, the indicators work automatically when you turn the wheel and the instruments are mainly for show. Turbo Esprit is more about the strategy of driving.

There is a Knight Rider style map which shows you where the baddies are, along with some radio messages which tell you of the latest sightings. If you run out of petrol you can bump up onto the curb next to a filling station for a top-up. The game is an accurate simulation, the other cars go about their business independently. If you park across a major junction you can create a jam which will snarl up the city. Unfortunately I was not able to get the criminals caught in the jam.

Controlling your Esprit is simple, forward to accelerate, back to stop, and back again to reverse (very handy when you miss turnings at 150mph). Left and right change lanes. When you fire as you press left or right your Lotus turns through 90 degrees. This makes shooting at hit cars a little risky if you need to change lanes.

The graphics are a bit jerky, but you are usually too busy playing to notice. The pole position style view from behind the car you are supposed to be in makes the game feel as though you are following in a Transit, but on the whole it is exciting and absorbing. The Durrell game has the advantage of being £23,000 cheaper than the real thing.

Author: Durell.
Price: £7.95.

Liz

This is the game for all boy (and girl) racers. OK, so my joystick may not be of the finest Connolly leather as used on Lotus steering wheels, but I felt a real James Bond – out to stop the drug dealers. There has been a lot of attention paid to incidentals, you can get stuck in dead ends and have to bump over the curb to turn round. The faster you drive the wider you go at corners.

I would like a way to recall the last radio message. There are no traffic cops about so you can't be booked for speeding, jumping lights or shooting the wrong car.

19/20

Colin

At first glance I thought, "Oh no not the dreaded Grand Prix Racer again" (for the uninitiated this was one of Amsoft's first games and was the absolute pits – if you'll excuse the pun).

However after playing if for a while it becomes obvious that there is much more to it. Although the graphics are a bit chunky looking and don't exactly make the most of this multi-coloured mode the game itself is certainly quite playable. The actual idea – drug smuggling – seems a little contrived, but it is great fun to be able to shoot other cars out of the way at traffic lights.

In fact there are two types of score, one for completing the task and the other that gives an idea of how bad a driver you are. This can be boosted by killing innocent cars and, best of all, mounting the kerb to kill a few pedestrians. Great fun, it really appealed to my warped sense of humour.

16/20

Nigel

Not bad, this. I like the details in it like the maintenance men climbing ladders. Driving the Lotus is a bit tricky to get the hang of, well it is if you try and do everything at top speed.

The ninety degree turns are particularly difficult at first, but after a while you can quite happily do a three point turn in a narrow back street. I can't think why a Lotus comes with a built in machine gun, but it's jolly handy for getting out of those awkward traffic snarl ups

A great feature is the way you get points for knocking down pedestrians and causing mayhem.

17/20

TANK COMMANDER



Here it is, it says it right here in my dictionary – a storage vessel for liquids or gas. The type of thing you find in everyone's loft. A tank. So who'd want to be in command of one of those?

Let's read the instructions. Objective – to rescue as many of your agents as you can from the enemy infested combat zone. And hide them in the water tank, brilliant! That's strange, it doesn't say anything about hiding them in the tank.

Oh well, if that isn't what you do, perhaps playing the game will make it clearer. I'll read this bit on how to play. Tactical mode, move your tank around the combat zone. Oh, it must have wheels on it, and when someone comes along you jump inside and hide, and they think it's just an old water tank. What a great idea for a game.

So to move the tank around you look at the large map and when the picture of the tank hits the edge of the screen the next part of the map scrolls on. Oh, there's a Turbo, it must have an engine in it. So you can use the joystick to rotate the tank and move it backwards and forwards.

There's another map. It shows you where your agent is and an overall view of the combat zone. So back on the main map, you move your tank toward your agent. Hang on though, the enemy has tanks as well. That's silly. If both sides know about hiding in water tanks, what's the point? If you move your tank close to one of theirs the screen changes to battle mode.

So let me see, how do you activate the laser? Gun descend, gun elevate, turret left, turret right. Turret? Where's that dictionary? Twaddle, tusk, turtle, turret. Small tower. And this is where you fire the shells from. Shells? Okay, stop pulling my leg, this game is a spoof isn't it?

These shells must be being shot from a gun that I'm holding. And the shells probably come from the beach that I saw on the map. Now if I rotate, the countryside scrolls past.

Hello what's this? A field gun pointed straight at me and a water tank with a field gun stuck on the top. If it wasn't firing these shells thingies at me, I could stop and think what a jolly good idea that is. What happens if I shoot back? That one went whizzing over the top, down a bit. Hit him. Ah ha! These numbers at the bottom of the screen go down. Got 'im. Now for the one at the back. Hello, where's he off to? Had enough, eh? Bah, missed. I need to shoot in front of him. One last shot. Aggghh! He got me!

I think hiding in motorised water tanks, with a big gun stuck on the top and trundling round the countryside makes a great game. I wonder if anyone's thought of doing it for real?

Author: Amsoft.
Price: £9.95.

Nigel

I wasn't that impressed by the disc version of Tank Commander – it did a lot of disc accessing just to generate pretty backgrounds. The only thing that seems to be missing from the tape version are the pretty pictures and this doesn't detract from the game at all.

So what are you left with? A fairly standard but challenging tank game. You won't be able to find another version of this game from another company – this is one of the few tank games around.

However the most famous of the others is Tankbusters by Design Design which is not an easy program to compete against.

7/20

Colin

Amsoft's policy of only taking top of the range software these days certainly seems to be paying off. Tank Commander is a very professional looking piece of software. There is a brilliantly detailed loader screen with a tank depicted in Mode 1. The game itself is in Mode 0.

This does make tank movement slightly jerky especially when moving diagonally but it is only a very minor irritation.

I found it best to pick the combat option early as this gives you more time to get the range of the enemy vehicles before they start firing back. The change from 2D map mode to 3D view while actually doing battle was an interesting idea. In fact the whole game was full of nice ideas and touches.

I could see the appeal wearing off a bit though as the gameplay is not very involved.

16/20

Liz

Tank Commander is like an earthbound version of Rescue on Fractalus. Unfortunately driving the Amsoft tank is nowhere near as much fun as flying the Activision spaceship.

The main thing that has been added is a scene which is like a cross between beach Head and Battlezone. The worst thing about the game is the way the background fails to reflect what is shown on the map – if you confront an enemy tank which is sitting on a bridge the last thing you expect to see in close up is a tank in the middle of a field.

Tank Commander is one of the better Amsoft products. Less of a case of Amsoft Gold and more Iron pyrite.

9/20

Dramatic News for Amstrad Users.

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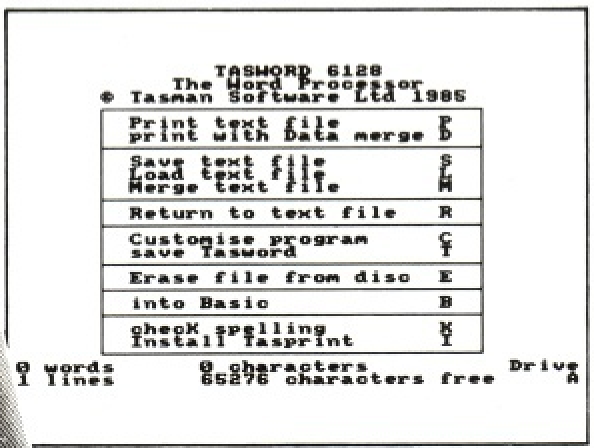
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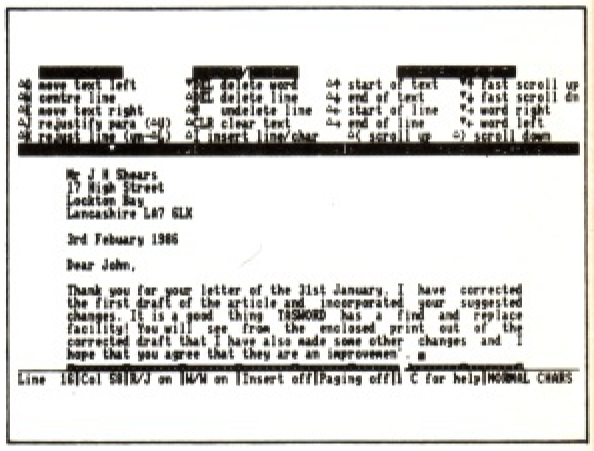
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EPSON MX-80 TYPE III	NEC PC-8023B-N	DATAC PANTHER II	

GALLUP SOFTWARE CHART

	TITLE	PUBLISHER	Last month		Months in chart	Margin strength
1	**LAST V8**	Mastertronic	7	▲	2	1000
2	**INTO OBLIVION**	Mastertronic	new	▲	1	927
3	**SPINDIZZY**	Electric Dreams	3	▶	2	867
4	**WAY OF THE TIGER**	Gremlin Graphics	2	▼	2	768
5	**GET DEXTER**	PSS	new	▲	1	676
6	**COMPUTER HITS 10 Vol. 2**	Beau Jolly	4	▼	2	616
7	**THEY SOLD A MILLION (2)**	Hit Squad	new	▲	1	609
8	**FORMULA ONE SIMULATOR**	Mastertronic	8	▶	7	556
9	**TURBO ESPRIT**	Durell	new	▲	1	516
10	**FINDERS KEEPERS**	Mastertronic	5	▼	10	503
11	**ONE MAN AND HIS DROID**	Mastertronic	10	▼	4	497
12	**CAVES OF DOOM**	Mastertronic	16	▼	6	457
13	**RAMBO**	Ocean	1	▼	3	444
14	**SABOTEUR**	Durell	new	▲	1	424
15	**COMMANDO**	Elite	new	▲	1	404
16	**ALIEN HIGHWAY**	Vortex	new	▲	1	391
17	**SPELLBOUND**	Mastertronic	17	▶	5	391
18	**THEY SOLD A MILLION**	Hit Squad	6	▼	6	384
19	**STRIKE FORCE HARRIER**	Mirrorsoft	new	▲	3	334
20	**CHILLER**	Mastertronic	13	▼	10	334

READERS' *Chart*

Your chance to vote for your favourite games.

Each month we will compile a chart from you votes which will reflect the games you think are the best and not the games which are selling well this month.

Just to spruce this up – and annoy a software house or two – we have included an Amstrad Turkey Award for the worst game you have ever played. This must be a commercially available program.

If you don't want to damage your magazine then you can photocopy or copy out the form below. Just to get things started we present the Editor's top ten games.

Simon's All Time Top Ten

1 Boulderdash – *Mirrorsoft*
2 Thing on a Spring – *Gremlin Graphics*
3 Defend or Die – *Alligata*
4 Tank Busters – *Design Design*
5 Tomahawk – *Digital Integration*
6 Batman – *Ocean*
7 Sorcery+ – *Virgin/Amsoft*
8 Yie Ar Kung Fu – *Imagine*
9 Knight Lore – *Ultimate*
10 Highway Encounter – *Vortex*

Amstrad Turkey Award – North Sea Bullion – Kuma

VOTING SLIP

You only get three votes – please use them wisely. The first form pulled from the hat wins a prize.

Game 1 ____________________

Game 2 ____________________

Game 3 ____________________

Amstrad Turkey ____________________

Name ____________________

Address ____________________

____

____

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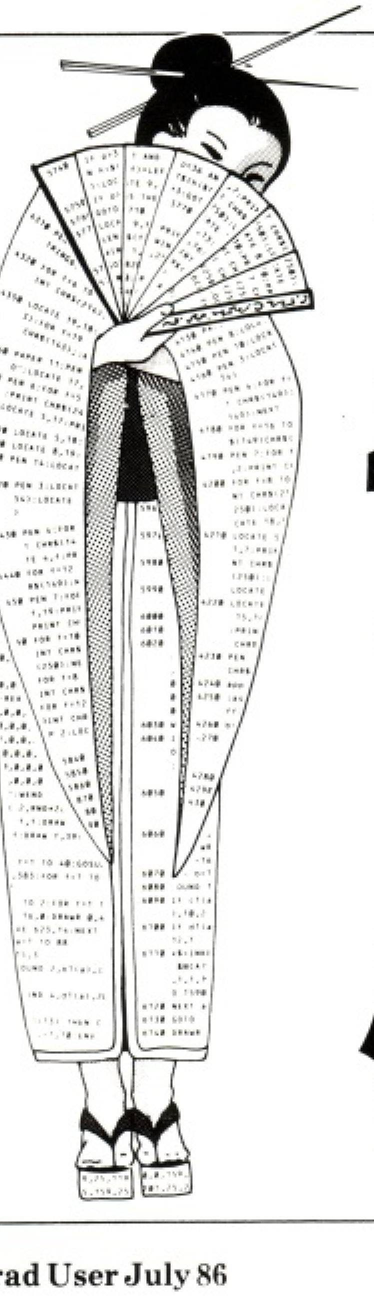
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Simon says send your votes to: ***169 Kings Road, Brentwood, Essex CM14 4EF.***


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LIZ TING

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Yes, that's right, we want lots of shortish programs for our readers to type in. They don't have to be games – we just have a preference for them. They can be anything that we find interesting. The things we don't find interesting are biorythm programs, pools predictors, simple databases, or anything to do with quadratic equations – unless they are written in one line, cellotaped to half a million quid or draw a pretty picture on the screen.

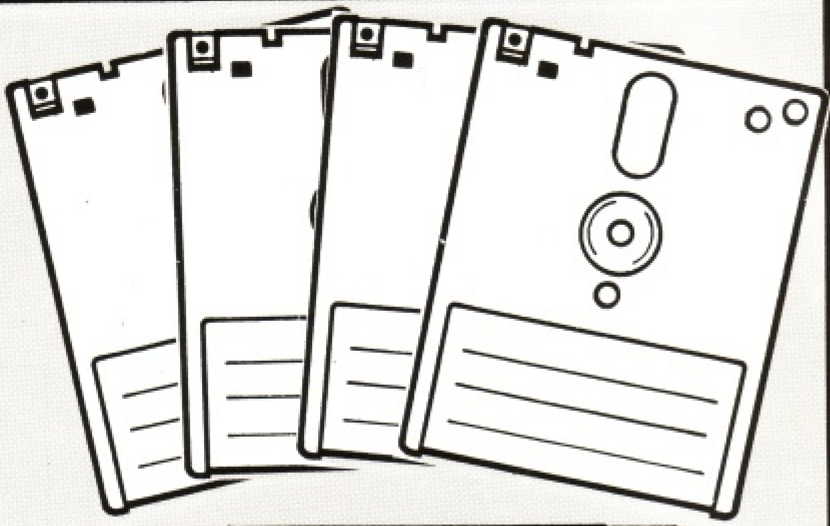
There are a few golden rules for submitting programs. Remember that you are writing a program for publication. Make your program easy to debug. Don't include unlistable characters in the program. Document start addresses and length of code when using machine code. Send the program on tape or cassette and include a SAE if you want it back. If you think the program does something particularly clever, write an explanation of the routine that does it. Don't include commands that work only on one particular machine.

Now you know what to do, get cracking! Send off your program today to:

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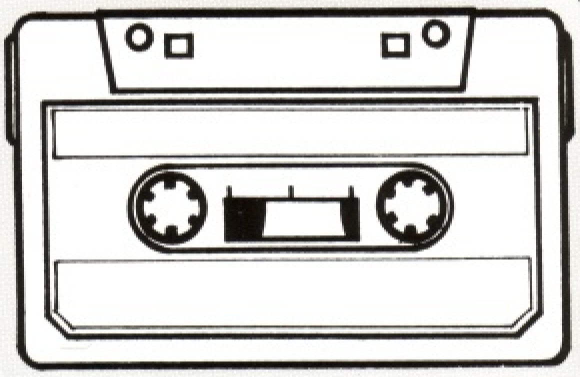
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MARCH: Roland takes a running jump source code.
Racer – prize winning listing.

APRIL: Animator, an advanced cartooning program.
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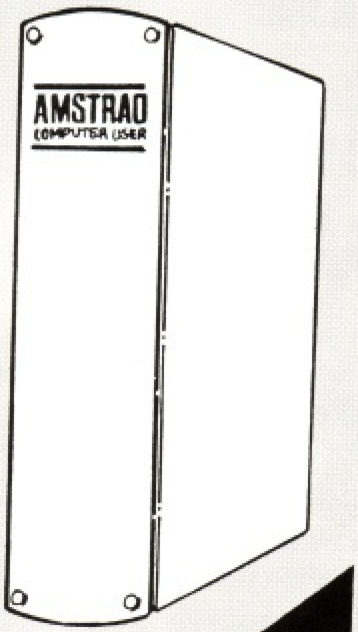
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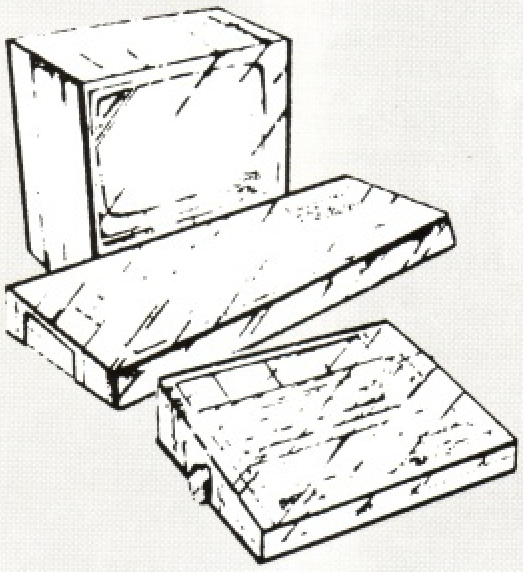
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The Least Significant Bit

Un-crushed

At the launch of the PCW8256, a certain man made a pronouncement on the validity of the serial interface for it. The "Pundit Crusher" was thus summarily dismissed as being of no commercial consequence, but merely a sop to the techies of the media who would otherwise have whined at its omission.

The difficulty in obtaining CPS8256 is as legendary as the 3 inch disc supply situation was, and so the exploitation of communications on this most ideal medium has been somewhat difficult. However things appear to be easing up and various alternative serial interfaces are emerging.

Communications software available looks promising, and so the PCW looks set to become the ideal machine for e-mail and telex. It's a shame Amstrad were so dismissive of this obvious application in the first place.

After Sinclair?

In their usual attempts to pin the tail on the donkey, journalists from all quarters of the media have been guessing what Amstrad is going to do next. One of the nicer pieces of speculation surrounds the thought that maybe Amstrad should buy the Amiga and then – unfettered by the Commodore corporate overhead and debt – put the thing out at the £499 that would turn it into the next Great Consumer Computer. Another rumour is that Amstrad will repackage the QL and turn it into the computer it almost was. A third rumour is that Amstrad is about to be bought by IBM.

These are about as unlikely as each other. Amstrad wins by cleaning up after a market is established. The poor people who are trying to sell an improved QL face a hard task if they want Amstrad to cooperate and that is not because they want the machine for themselves. On past performance, Amstrad is probably too conservative to trailblaze with such a product. On the other hand, do you think fate is trying to tell Mr Sugar something, since he shares the initial two letters with the product that many believe could become a market stopper if marketed by the right organisation?

Amstrad does not appear to have a replacement for the CPC6128 on the stocks, and the Spectrum fills the bottom end gap in the home market. But it would be a shame to see the CPC464 suffer at the hands of the Spectrum.

Buyer's choice

It's hardly surprising that Alan Sugar's view of the City and the investment fraternity is the subject of repression by Amstrad's PR agency. Wouldn't it be a nice idea if when you bought a product, you had the option to buy a share – without the palava of stock brokers and the rest of the City leach industry – in the company that made it? After all, by choosing that product in the first place you are expressing faith in the firm – and the thought that every owner was also a stock holder would put the manufacturing company on its mettle.

It's definitely a bigger downer if someone stands up at the shareholders' AGM to moan about the keys that fell off his computer than if the same person gets fobbed off into the euphemistically named "customer services" department.

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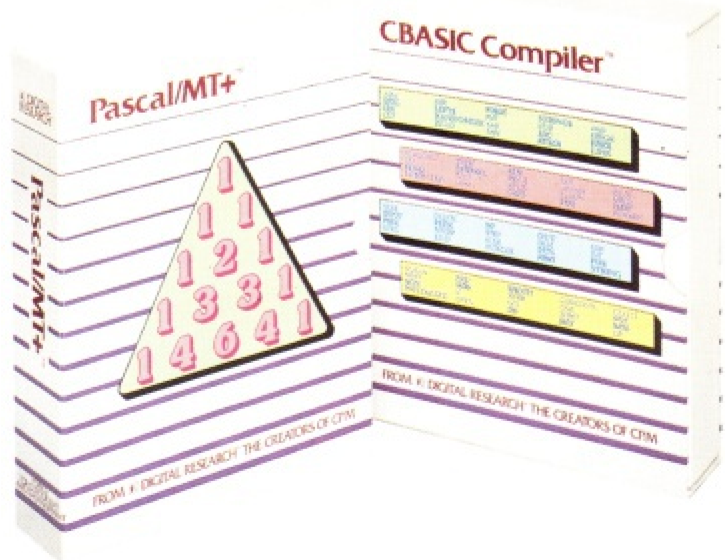
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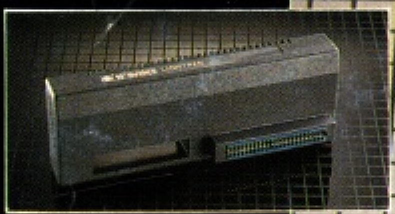
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